



**CLINICAL INFORMATION  
RESOURCE NETWORK  
(CIRN)**

**PATIENT DEMOGRAPHICS (PD)  
TECHNICAL MANUAL**

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# Preface

The key objectives of the Clinical Information Resource Network (CIRN) project are to identify the sites where a patient is receiving care, to share the clinical data for a patient between those sites, to create and to maintain a clinical repository at each site reflecting patient care delivered throughout the Veterans Health Administration (VHA). The clinical repository must store clinical essentials of data important to primary and longitudinal patient care, accommodate data from external sites (VHA and non-VHA), facilitate decision support, manage data independently of departmental application storage policies, support longitudinal record growth, and support evolution of data classes stored.

The complete CIRN package is comprised of CIRN Patient Demographics (CIRN-PD) Pre-Installation and Implementation, CIRN Clinical Repository (CIRN-CR) and CIRN Patient Demographics (CIRN-PD). This manual covers only those elements that are used by the CIRN Patient Demographics module. Information that is exclusive to CIRN Clinical Repository module is not covered. Manuals for the Clinical Repository portion of CIRN will be available with the CIRN 1.5 release.

At the current time, CIRN and Master Patient Index **VSTA** (MPI) are distributed and installed together. This manual covers the installation information for both packages.

## ***Reference Material***

CIRN-PD manuals include:

*CIRN Patient Demographics (CIRN-PD) Pre-Installation and Implementation Guide*  
*CIRN Patient Demographics (CIRN-PD) and Master Patient Index (MPI) Installation and Implementation Guide,*  
*CIRN Patient Demographics (CIRN-PD) Technical Manual,*  
*CIRN Patient Demographics (CIRN-PD) Patient Administration User Manual,*  
*CIRN Patient Demographics (CIRN-PD) HL7 Interface Manual,*

You should also become familiar with the Master Patient Index (MPI **VSTA**) documentation. MPI manuals include:

*Master Patient Index (MPI) VSTA HL7 Interface Specifications*  
*Master Patient Index (MPI) VSTA User Manual*  
*Master Patient Index (MPI) VSTA Technical Manual*  
*Master Patient Index (MPI) VSTA Monograph*  
*Master Patient Index (MPI) VSTA Release Notes*

One of the major pre-implementation tasks for CIRN is the merging of duplicate patient records at a site. The *Duplicate Record Merge: Patient Merge (Patch XT\*7.3\*23) User Manual* is required for this task.

**NOTE:** After CIRN PD/MPI is installed, the Merge Utility (XT\*7.3\*23) can not be used to merge patient records. Sites should make every attempt to resolve potential duplicates. Once sites initialize against the MPI, any unresolved duplicates will have to be held in abeyance until the

merge software becomes “CIRN aware”. It is recommended that the option to merge patient records be placed out of order until that time.

Because of the close interaction of CIRN with other packages, the user may find it helpful to review documentation for **VSTA** Health Level 7 (HL7) V. 1.6, updates to the Patient Information Management System (PIMS) V. 5.3 Admission-Discharge-and Transfer (ADT) module documentation, Run Time Library V. 2.1, and Extensible Editor V. 2.6.

## Acknowledgment

CIRN was inspired by the Regenstrief Medical Record System from the Regenstrief Institute of Indianapolis, Indiana.

## Dedication

In memory of Georgia Sehon: respected colleague, accomplished professional, and valued member of the CIRN team.

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# Introduction

## ***Background***

The Veterans Health Administration (VHA) is in the process of restructuring its health care delivery system, moving from a model focused on independent medical facilities to a model based on Veteran Integrated Service Networks (VISNs). Corresponding changes in requirements for VISN-wide clinical data services have resulted in a need for the Clinical Information Resources Network (CIRN) package.

## ***CIRN Principals and Objectives***

The project definition is based on the following principles developed with input from VISN workgroups.

- A patient will always have a "home" VISN with a "primary" source of care in that VISN.
- Key demographic information will be the same at each of the treating facilities for any patient that is seen at more than one site.
- Clinical information for a given patient is stored in the clinical repository at each site where that patient has received care.

The key objectives of the CIRN project are to identify the sites where a patient is receiving care, to share the clinical data for a patient between those sites, to create and maintain a clinical repository at each treating facility reflecting patient care delivered throughout the VHA. The clinical repository must store the clinical essentials of data important to primary and longitudinal patient care, accommodate data from external sites, facilitate decision support, manage data independently of departmental application storage policies, support longitudinal record growth, and support evolution of data classes stored.

## ***CIRN Functionality***

The initial synchronization of patient file information (for active, shared patients) with the Master Patient Index and with the patient's treating facilities is an important step in the implementation of the CIRN software system. The initialization process transfers the Integration Control Number (ICN), CIRN Master of Record (CMOR), and Treating Facility list for each patient to the patient's record in the **VSTA** Patient file at all sites where the patient has been treated.

## **Patient Record Integration**

The second function is the patient record integration activities that are responsible for identifying and maintaining information needed to successfully share patient data between sites. Whenever key patient demographic information for a shared patient changes, a message with the changes is sent to the patient's CMOR where the changes are accepted or rejected. If accepted, the updates are broadcast to all treating facilities for that patient.

## **Clinical Repository**

The third function is the movement of clinical data between subscribing sites to create and maintain the clinical repository that contains the clinical information for a given patient. Patient, Entity (clinical attribute, result, or procedure), Date/Time, Site, Provider, Visit, and Results will all be part of the data in the Medical Record File. This functionality will be available with the release of CIRN V. 1.5.

### ***CIRN Master of Record***

The CIRN Master of Record (CMOR) is the designated "owner" of the patient's descriptive and clinical data and plays a major role in the distribution of descriptive and clinical data. A patient will have only one CMOR at a time. The CIRN Master of Record automatically becomes a clinical subscriber to that patient's data. The designation as the CMOR for a patient does not provide "workload credit" or any other distinction.

During the Pre-Implementation phase, a CMOR score based on activity (Current FY, FY-1, FY-2) was calculated for the active patients in your Patient file. The CMOR score indicates to the Master Patient Index (MPI) which patients in your Patient file are active. During initialization of your database with the MPI, the first site at which the MPI encounters a patient will be assigned as the CMOR. Following the initialization with the MPI, your site will run an option that identifies the shared patients for which you are **not** the CMOR, compares the CMOR scores, and reassigns the CMOR if that action is appropriate.

### ***The Master Patient Index Overview***

The Master Patient Index (MPI) assigns and maintains unique patient identifiers, known as integration control numbers (ICNs) that link patients to their records across VHA systems. It also contains the CIRN Master of Record (CMOR) and a current list of treating facilities subscribing to a patient's data.

When a patient is first seen at a site for care (the site has not previously treated the patient) or the patient did not get an ICN during the initialization phase, a real-time query is generated to the MPI when using the Register a Patient or Load/Edit Patient Data or 10-10T Registration options. If the patient is not known to the MPI, the patient's identifying information —name, Social Security Number (SSN) (unless pseudo SSN or missing), date of birth, mother's maiden name, place of birth state and place of birth city— is passed to the MPI. If the patient is not already known to the MPI, the MPI assigns an integration control number (ICN) and assigns the requesting site as the CIRN Master of Record. If the patient is already known to the MPI, the MPI returns the patient's ICN, CMOR, and the list of known treating facilities. The requesting site is added to the treating facility list.

Each site will have a block of local ICNs assigned for automatic use in the event that the MPI cannot be reached. When local ICNs are assigned to patients, background processing ensures that they are processed against the MPI as soon as possible. It will also process any missing ICNs for new patients added to the Patient file by means other than Load/Edit and Registration and 10-10T Registration. If the patient is not known to the MPI (new patient), the MPI will assign a new ICN and the site will be the CMOR. If the patient is already known to the MPI (exact match), the MPI will return the ICN, CMOR and list of treating facilities. The locally assigned ICN will be stored as part of the patient record in the ICN History. If a list

of potential matches is found on the MPI, an Exception Message is sent noting that human resolution using the Single Patient Initialization to MPI option is needed.

### ***Other Facility Categories***

A facility's relationship to the patient determines what information it receives and sends. CIRN maintains this information to ensure proper routing of patient data.

### **Treating Facilities**

Any facility where a patient registers for care (regardless of VISN) is placed on the Treating Facility List. This list is part of the patient descriptive data that is synchronized. Treating Facilities receive both descriptive and clinical updates for that patient but may elect to receive descriptive updates only. They may not deactivate their subscription to descriptive (i.e., patient demographic) data.

Changes to patient descriptive data that are identified at a treating facility trigger a message to the CIRN Master of Record. After review and acceptance, the CMOR broadcasts an update message to all treating facilities, subscribers, and the MPI. Clinical updates to the patient's record are made directly from the treating facility and broadcast to all other treating facilities and clinical subscribers for the patient.

### ***Subscribers***

A patient's subscription list is maintained and synchronized at each site where the patient is known. A site "subscribes" in order to receive a patient's descriptive and/or clinical data from other sites. Sites can only activate/deactivate subscriptions themselves except in cases of automatic subscription (as a treating facility upon registration of a patient known elsewhere). When patient messages are generated at a site, they are routed to the subscribers on the list for that patient. The subscription mechanism can also be used to maintain longitudinal research databases..

The subscription list differs from the Treating Facility list in that subscribers do not need to be Treating Facilities. Subscribers that are not also designated as treating facilities may deactivate their subscription by entering an expiration date. For treating facilities, a subscription with an infinite expiration date is implied. They may not deactivate from descriptive subscriptions. A subscriber history list is maintained of sites that have deactivated subscriptions.

### **Descriptive Subscriptions**

Descriptive subscriptions receive changes to patient demographic information including CMOR changes and updates to the subscription and treating facilities lists. Descriptive subscribers can request a change in status if they wish to also receive clinical repository data. The descriptive subscription list for a patient is synchronized across subscribing sites.

## **Clinical Subscriptions**

Clinical subscriptions will receive updates to both the patient's descriptive data and clinical repository information. Clinical subscribers do not need to be treating facilities. A clinical subscriber can request a change to a descriptive only category. Clinical Subscriptions and shared clinical data will be available with the release of the Clinical Repository in CIRN V. 1.5

A subscription to clinical data can be marked as "local" if a subscriber wants data from only that site for a patient, as might be the case in research projects. Local subscriptions are not synchronized across sites.

## **Effects of Patient Registration**

When a shared patient registers at your facility, a registration message is sent to the CMOR and clinical and descriptive subscriptions for that patient are created for your site. The CMOR then broadcasts a message to update the lists of other subscribers.

# Implementation and Maintenance

## *Name and Number Spaces*

The CIRN package namespace is RG, excluding RGED (reserved for Extensible Editor) and RGUT (reserved for Run Time Library) and the file range is 990-995 and 997-999.99.(File range 996-996.99 is reserved for Extensible Editor.)

## *External Relations*

The following packages (fully patched) must be installed at the site:

### **CAUTION!!**

#### **DO NOT INSTALL HL\*1.6\*39 in any TEST account!**

If you install this patch in your test account, you will link your test account to all the other production accounts. Since there are similarities (e.g., patient names/data) in test and production, it would not be good for data from the test account to be transmitted to the production account at another site.

Application	Version # and Patches
CIRN	Version 0.5
Scheduling	Version #5.3 SD*5.3*185
PIMS	Version #5.3 DG*5.3*149
HL7	Version #1.6 HL*1.6*17 HL*1.6*19 HL*1.6*26 HL*1.6*35 HL*1.6*39T16 (in Production account only) HL*1.6*41 HL*1.6*43 HL*1.6*51
MailMan	Version #7.1 XM*DBA*115
KERNEL	Version #8 XU*8*24 XU*8*41 XU*8*43 XU*8*44 XU*8*49 XU*8*67 XU*8*68 XU*8*69

	XU*8*85 XU*8*94 XU*8.0*111
KERNEL Toolkit	Version #7.3 Duplicate Resolution patch XT*7.3*23
VA FileMan	Version #21
Extensible Editor	Version 2.6
Run Time Library	Version 2.1
Pharmacy	If current version of Inpatient Medications is Version #4.5 PSJ*4.5*43  If current version of Outpatient Pharmacy Version #6.0 PSO*6*156  If running Computerized Patient Record System (CPRS), and: current version of Outpatient Pharmacy is Version #7.0 PSO*7*11

**NOTE:** If you are a Cache site and are planning to use a multi-threaded listener (which is recommended), you will need patch XU\*8.0\*78.

### ***Legal Requirements***

This package does not impose any additional legal requirements on the user. All users are reminded that many of the reports generated by this package contain confidential patient information and should be treated accordingly.

### ***Capacity Management and System Diagnostics***

The Capacity Management team will work closely with sites to determine whether the workload associated with CIRN will affect the system negatively. They have also developed a number of tools that monitor the system to provide benchmarking data for further study and process improvement. These may include:

- Statistical Analysis of Global Growth (SAGG) - focuses on package-specific impact on data storage, monitors global and file usage.
- Resource Usage Monitor (RUM) - measures resource consumption by package. **Sites that elect to install and use the Resource Use Monitor package should do so prior to any of the CIRN installation steps.**
- VAX Performance Analyzer (VPM) - monitors system and stores a key subset of data associated with configuration, database activity, response time, central processing unit (CPU), memory and Input/Output (I/O) utilization.

Other system diagnostics that should be performed are:

Transmission Control Protocol/Internet Protocol (TCP/IP) Testing: For the Digital Equipment Corporation (DEC) Alpha sites which were not old 486 sites, test the TCP/IP connection via a "PING" function or other method. This insures that the software and hardware mechanisms associated with this communications protocol are prepared to function. It is also a preventive diagnostic for communications with the MPI Austin.

## ***Hardware Requirements***

CIRN is designed to run on standard or upgraded Alpha AXP clusters with Virtual Memory System (VMS) or on New Technology (NT) and Open M. TCP/IP setups will have to be in place (see Appendix C).

CIRN and MPI **VSTA** use TCP/IP as the communications protocol for transmitting and receiving patient information. Use existing system tools for fine-tuning your TCP/IP capabilities.

## ***Space requirements***

If using TCP/IP, outgoing messages will consume approximately 10-20 k/message Mb of space in the ^HL globals for 40,000-50,000 active patients. Incoming messages will consume approximately 15-25 Mb of space.

If not using TCP/IP, outgoing messages consume approximately 22-25 k/message Mb of space in the ^HL globals for 40,000-50,000 active patients. Incoming messages consume approximately 35-40 Mb of space.

## ***Auditing***

Patch DG\*5.3\*149 added new cross references to the following Patient file (#2) fields, to assist CIRN in monitoring changes made to these fields. During the normal daily operations of CIRN, it is possible that these fields may be updated by CIRN HL7 Messaging. Patch DG\*5.3\*231 exported with CIRN PD/MPI KERNEL installation and Distribution System (KIDS) build enables auditing for the following fields so they can be monitored by CIRN.

- Sex
- Date of Birth
- Marital Status
- Religious Preference
- Social Security Number
- Street Address [Line 1]
- Zip+4
- Street Address [Line 2]
- Street Address [Line 3]
- City
- State
- County

Phone Number [Residence]  
Phone Number [Work]  
K-Name of Primary NOK  
K-Phone Number  
Mother's Maiden Name  
Service Connected?  
Service Connected Percentage  
Employment Status  
Period of Service  
Date of Death  
Type  
Veteran (Y/N)?

The DG Security Log file (#38.1), Field #2 Security Level is also monitored for changes to patient sensitivity.

## ***Global Information***

Globals included in the installation are shown in the File List.

The following globals need to be placed on the system:

^RG\* (^RGSITE, RGHL7 ^RGEQASN, ^RGEQEXC, ^RGSTAT, ^RGEQ) - minimal anticipated growth  
^MPIF - no anticipated growth

You will need to reboot your system for translations to take effect.

Check disk space for 150 Mb of available space for growth in ^HL Based on Test Site information, projected growth of the ^DIA (audit global) is 400-500Mb over a one year period.

## **Global configuration**

Alpha Cluster(DSM): The globals should be placed and protected on the proper volume set using the %GLOMAN utility.

Open M: Use the GUI Global utility to add and place the globals. Default global attributes should be used.

	<b>System Owner</b>	<b>World</b>	<b>Group</b>	<b>UCI/USER NET</b>
Alpha (DSM)	RWP	RWP	RWP	RWP
Open M	RWD	R	R	RWD



## ***Journaling***

Journaling should be off during the installation but should be enabled afterwards for ^RG\*.

**NOTE:** HL\*1.6\*52 has recommendations for HL7 global journaling that should be reviewed. The CIRN and MPI packages both heavily use HL7 messaging.

## ***Routine Mapping***

Several templates associated with the Patient file (#2) are compiled during DG\*5.3\*231 portion of the CIRN/MPI installation. If any of the following routine namespaces are currently mapped at your site, they should be unmapped prior to starting the installation. If your site cannot map/unmap using the \* wildcard, a complete list of the mapped/unmapped routines can be found in Appendix.

A1CKC*	DGPTX1*
DGRPTX*	DGRPXC*
DGRPXC*	DGRPXX7*
DVBAXA*	DVBHCE*
DVBHCG*	GMRDSTR*
GMRDSTV*	IBXBCR2*
IBXSC1*	IBXSC2*
MCARORB*	SDM1T*
TIUPREL*	

## ***HL7 Management***

CIRN/MPI makes heavy use of HL7 messaging. The HL7 globals should be checked for sufficient room for growth. In addition, check to see if the HL7 patch, HL\*1.6\*39, properly brought in all of the sites HL Logical Link file (#870) and set the Queue Size field (#21) to ten. Also each site that is running UCX (non-Caché) will need to change their sites (VA<your site's three letter abbreviation> TCP) HL Lower Level Protocol Parameter file (#869.2) entry, field TCP/IP Service Type (#400.03) to M for Multi Listener Server. See patch HL\*1.6\*19 for further instructions.

## CIRN Bulletins

RG CIRN DEMOGRAPHIC ISSUES: This mail group is sent the following patient related and Master File update bulletins. It is also used when Exception Messages are generated related to patient data. More detailed information on these bulletins can be found in Appendix E.

<b>Patient Related Bulletin</b>	<b>Cause</b>	<b>Action to take</b>
MISSING DATA	Name, Date of Birth (DOB), or Integration Control Number (ICN) field is missing or null in the incoming message.	Contact National <b>VISTA</b> Support (NVS) Help Desk for assistance.
PATIENT NOT FOUND	Patient ICN referenced in HL7 message cannot be found in receiving site database.	Contact National <b>VISTA</b> Support Help Desk for assistance.
INCONSISTENT DATA	Social Security Number (SSN) or CMOR data in message doesn't match information in receiving site database.	Contact National <b>VISTA</b> Support Help Desk for assistance.
REMOTE SENSITIVITY INDICATED	Patient is marked as sensitive at the sending site but not at receiving site.	No action: message is informational
REMOTE DEATH INDICATED	Patient has a date of death entered from the sending site but not at the receiving site.	No action: message is informational
CIRN ADDRESS CHANGE	Address related information: fields were deleted based on information received from the CMOR.	No action

The Master File Update bulletins going to MPI Austin differ from the patient related bulletins in that the data being passed is different.

<b>Master File update Bulletin</b>	<b>Cause</b>	<b>Action to take</b>
PATIENT NOT FOUND	Patient ICN referenced in HL7 message cannot be found in receiving site database.	Contact National <b>VISTA</b> Support Help Desk for assistance.
INCONSISTENT DATA	CMOR doesn't match	Contact National <b>VISTA</b> Support Help Desk for assistance.

## Exception Handling Messages

CIRN's exception handler generates messages to alert the user of problems that occur in generating or processing HL7 messages. See Appendix E for examples of messages that may be received during the implementation phase and what should be done with each message.

## CIRN/MPI Mail Groups

<b>Mailgroup</b>	<b>Suggested Coordinator</b>	<b>Suggested Members</b>
RG CIRN DEMOGRAPHIC ISSUES	Patient Admin Coordinator/Medical Administration Service (MAS) Automated Data Processing Application Coordinator (ADPAC)	Personnel that deal with patient data.
RG CIRN HL7 PROBLEMS	Person who will monitor CIRN HL7 problems.	Person who will monitor CIRN HL7 problems.
MPIF EXCEPTIONS	Information Resource Management (IRM) person who will be monitoring the technical type problems that can occur during messaging.	IRM person who will be monitoring the technical type problems that can occur during messaging.
MPIF CMOR REQUEST	Person who will monitor CMOR Change Requests.	Personnel that will process CMOR Change Requests.
MPIF HL7 GROUP	IRM Staff	No members should be placed in this mail group. This group is used to transmit HL7 messages to the MPI via MailMan.

**NOTE:** The MPIF Exceptions mail group will potentially have a large number of messages sent to it during the Initialization process. This will only occur in such large numbers during the initialization process, but other messages can be generated during daily operations.

## Site Parameters

### 1. Set Site Parameters

While all of the following parameters are important and should be reviewed with your MAS ADPAC, in order to proceed with your post installation you **MUST** use the RG CIRN Process control option to set CIRN messaging to SEND.

- **Site Parameters Edit for CMOR [MPIF SITE PARAMETER]** found on the Patient Admin Coordinator Menu.

Your site can select whether requests for a change to a patient's CMOR will be processed automatically or placed in a review file for manual processing. If you select MANUAL, mail messages

will be sent to the mail group entered in "New Request Mailgroup" whenever change requests are received.

```
Type of Processing: MANUAL// ??
  Based on this field setting, any CMOR change request received
  from another station can either be manually reviewed or automatically
  approved.
  Choose from:
    0      MANUAL
    1      AUTOMATIC
Type of Processing: MANUAL// <RET>
New Request Mailgroup: MPIF CMOR REQUEST// ??
  If the CMOR Request Change parameter is set to manual, new CMOR change
  requests received will notify the mailgroup entered in this field. This
  gives a means of prompting someone to review the new request.
New Request Mailgroup: MPIF CMOR REQUEST // <RET>
```

- **Edit Merge Parameter** [RG MERGE EDIT PARAMETER] found on the Patient Admin Coordinator Menu

Your site can select whether updates to your Patient file that come from other sites will be processed automatically or placed in a review file for manual processing. This parameter will have no effect at a non-CMOR site.

**Note:** Setting this parameter to "NOT AUTO ACCEPT", places the responsibility on MAS to keep up patient demographic changes that are received from non-CMOR sites. These changes can be reviewed using the Patient Data Review option, [VAFC EXCEPTION HANDLER]. Sites may want to start with NOT AUTO ACCEPT and then change to AUTO ACCEPT once comfortable with the types of changes.

```
AUTO ACCEPT DEMOGRAPHICS: NOT AUTO ACCEPT// ??
  This field is the parameter that a site would set to determine if data
  coming from another site, that is not the owner of the data, could be
  automatically uploaded.
  If this field is not set then the software will assume that all incoming
  data can not be automatically uploaded.
  Choose from:
    1      AUTO ACCEPT
    0      NOT AUTO ACCEPT
AUTO ACCEPT DEMOGRAPHICS: NOT AUTO ACCEPT// <RET>
```

- **HL7 Application Parameters file**

Check that the correct Station Number is entered in the Facility Name field (#3) of the HL7 Application Parameter file (#771). Local modifications to your Institution file may conflict with CIRN installation set-up.

```

Select HL7 Main Menu Option:
 1      V1.5 OPTIONS ...
 2      V1.6 OPTIONS ...
 3      Activate/Inactivate Application
 4      Print/Display Menu ...
 5      Purge Message Text File Entries

Enter ?? for more options, ??? for brief descriptions, ?OPTION for help text.

Select HL7 Main Menu Option: 2  V1.6 OPTIONS

 1      Communications Server ...
 2      Interface Workbench
 3      Message Requeuer

Enter ?? for more options, ??? for brief descriptions, ?OPTION for help text.

Select V1.6 OPTIONS Option: 2  Interface Workbench

                                Currently Defined
                                Applications

(#) MPIF CMOR RSLT
Facility Name: {Your Station # must be here}   Active/Inactive: ACTIVE
Country Code: USA                               HL7 Field Separator: <DEFAULT>
Mail Group:                                     HL7 Encoding Characters: <DEFAULT>

(#) MPIF CMOR COMP
Facility Name: : {Your Station # must be here} Active/Inactive: ACTIVE
Country Code: USA                               HL7 Field Separator: <DEFAULT>
Mail Group:                                     HL7 Encoding Characters: <DEFAULT>

(#) MPIF-STARTUP
Facility Name: : {Your Station # must be here} Active/Inactive: ACTIVE
Country Code:                                   HL7 Field Separator: <DEFAULT>
Mail Group:                                     HL7 Encoding Characters: <DEFAULT>

(#) MPIF A29 SERVER
Facility Name: : {Your Station # must be here} Active/Inactive: ACTIVE
Country Code:                                   HL7 Field Separator: <DEFAULT>
Mail Group:                                     HL7 Encoding Characters: <DEFAULT>

(#) MPIF A30 SERVER
Facility Name: : {Your Station # must be here} Active/Inactive: ACTIVE
Country Code:                                   HL7 Field Separator: <DEFAULT>
Mail Group:                                     HL7 Encoding Characters: <DEFAULT>

(#) MPIF LOC/MIS
Facility Name: : {Your Station # must be here} Active/Inactive: ACTIVE
Country Code:                                   HL7 Field Separator: <DEFAULT>
Mail Group:                                     HL7 Encoding Characters: <DEFAULT>

(#) RG CIRN
Facility Name: : {Your Station # must be here} Active/Inactive: ACTIVE
Country Code: USA                               HL7 Field Separator: <DEFAULT>
Mail Group: CIRN HL7 PROBLEMS                  L7 Encoding Characters: <DEFAULT>

(#) VAFC PIMS

```

Facility Name: : {Your Station # must be here}	Active/Inactive: ACTIVE
Country Code: USA	HL7 Field Separator: <DEFAULT>
Mail Group: CIRN HL7 PROBLEMS	HL7 Encoding Characters: <DEFAULT>

- **Stop/Send/Suspend CIRN Messages [RG CIRN PROCESS CONTROL]**

The Stop/Send/Suspend CIRN Message Processing option is provided as a standalone option. It is **NOT** to be attached to any menu. This option allows IRM to set the message activity state (Send/Suspend/Stop). This option is used to edit the Stop CIRN Messaging field (#16) in the CIRN Site Parameter file (#991.8), to STOP/SEND/SUSPEND CIRN messages.

**You must be in SEND mode to begin the MPI Initialization phase.**

STOP - should be used only to totally shutdown HL7 V2.3 and CIRN messages. It should only be used under the direction of Technical Services.

SUSPEND - should be used in an emergency situation to suspend HL7 V2.3 and CIRN messages if the volume of messages is affecting system performance. Technical Services should also be called in this situation.

SEND - normal operating mode.

<b>D ^XUP</b>	
Setting up programmer environment	
Terminal Type set to: <b>C-VT320</b>	
Select OPTION NAME: RG CIRN PROCESS CONTROL	STOP/SEND/SUSPEND CIRN
messages	
STOP CIRN MESSAGING: STOP MESSAGES// <b>SEND</b>	
In sync with MAS parameter.	

**NOTE:** If not in sync with the MAS Parameter, you will need to contact your MAS Coordinator to get the Send PIMS HL7 V2.3 Messages field (in the MAS Parameters file(#43)) set to SEND also. If the two parameters are not in sync, the implementation process can not continue.

# Menu Options for IRM

The CIRN Initialization Menu and the CIRN IRM Menu are designed for use by IRM personnel. This section provides guidance in the use of the options.

## **NTL CIRN Initialization Menu ... [RGINIT MENU]**

### CIRN Master of Record Menu ... [RGCIRN CMOR MAIN]

- BGN Start/Restart CMOR Score Calculation [RGCIRN CMOR START]
- HLT Stop CMOR Score Calculation [RGCIRN CMOR STOP]
- IND Calculate Individual Patient CMOR Score [RGCIRN CMOR NDIV]
- CSS CMOR Score Calculation Status [RGCIRN CMOR STATUS]
- DRS Duplicate Record by CMOR Score [RGCIRN CMOR DUP SCORES]
- STAT Duplicate Record Statistics [RGCIRN CMOR DUP STATS]

### Patient File Initialization to MPI [MPIFINIT DPT TO MPI]

### CMOR Comparison Menu ... [MPIF COMP MAIN]

- CMOR Comparison Process Status [MPIF CMOR COMP STATUS]
- Begin CMOR Comparison [MPIF CMOR COMP BATCH]
- Stop/Restart CMOR Comparison Process [MPIF CMOR COMP STOP/RESTART]

## **IRM CIRN IRM Menu ... [RG IRM MENU]**

### CIRN Event Queue Manager ... [RGEQ MGR]

- Start CIRN Event Queue [RGEQ START]
- Halt CIRN Event Queue [RGEQ STOP]
- Error Processing CIRN Event Queue [RGEQ ERROR]
- CIRN Event Queue Class Statistics [RGEQ STATS]

### HL7 Exception Utility [RGHL EXCEPTION]

## ***NTL CIRN Initialization Menu ... [RGINIT MENU]***

The options on this menu are used in the initialization and implementation of CIRN. They are also covered in the Post-Initialization steps of the *CIRN-PD/MPI Installation and Implementation Guide*. They are discussed here in the order in which they are used rather than in the order that they appear on the menu.

Most of the options on the CIRN Master of Record Menu will have been performed prior to installing CIRN-PD/MPI V. 1.0 using the same options provided in CIRN Pre Installation and Implementation V. 0.5. However, if it has been longer than two weeks since the CMOR Score Calculation was run, you should re-calculate the scores before running any other options.

## CIRN Master of Record Menu

BGN	Start/Restart CMOR Score Calculation [RGCIRN CMOR START]
HLT	Stop CMOR Score Calculation [RGCIRN CMOR STOP]
IND	Calculate Individual Patient CMOR Score [RGCIRN CMOR INDIV]
CSS	CMOR Score Calculation Status [RGCIRN CMOR STATUS]
DRS	Duplicate Record by CMOR Score [RGCIRN CMOR DUP SCORES]
STAT	Duplicate Record Statistics [RGCIRN CMOR DUP STATS]

The CMOR (CIRN Master of Record) is the designated "owner" of the patient's demographic and clinical data and plays a major role in the distribution of demographic and clinical data to other sites. The CMOR Activity Score indicates to the MPI which patients in your Patient file are active. During initialization of your database with the MPI, the first site at which the MPI encounters a patient will be assigned as the CMOR. Following the initialization with the MPI, your site will run an option that identifies the shared patients for which you are **not** the CMOR. An option is provided to send messages to the CMOR sites in order to compare the CMOR Activity Scores and reassign the CMOR if that action appears to be appropriate.

The score is stored in the CMOR Activity Score field (#991.06) and the date it was calculated is entered into the Score Calculation Date field (#991.07) of the Patient file (#2).

The Start/Restart CMOR Score Calculation option calculates a CMOR Activity Score for the active patients in your Patient file (#2) based on activity (Current FY, FY-1, FY-2). In essence, the software assigns "points" for specific activity. The following table lists the Patient Activity Indices used along with the associated points tallied for each match.

PATIENT ACTIVITY INDICES	TIMEFRAME	CMOR POINTS
Outpatient Visits	Current FY	30 points
	FY (-1)	20 points
	FY (-2)	10 points
Appointments with Stop Code 323 (Primary Care)	Any Appts	50 (additional) points
Admissions	Current FY	50 points
	FY (-1)	40 points
	FY (-2)	30 points
Current (active) / New Prescriptions		20 points
Lab Tests	Last 12 months	10 points
X Rays	Last 12 months	20 points
Fee Basis	FEE Authorization (To Date) on or after 1/1/96	0

Patients with no activity for this timeframe (current FY and 2 FY prior) are excluded. Patients with a pseudo SSN and deceased patients will have a CMOR score calculated if they have patient activity within the timeframe. FEE BASIS patients with no activity but who have an Authorization Date after 10/1/96 are given a score of zero (0) to ensure that they are added to the MPI. Patients with a pseudo SSN and deceased patients will have a CMOR score calculated if they have patient activity within the timeframe.



*Start/Restart CMOR Score Calculation option [RGCIRN CMOR MAIN]*

The Start/Restart CMOR Score Calculation starts the background job that calculates the CMOR score for each active patient and records the score and date in your Patient file (#2). The process can be stopped during hours of peak activity and restarted at a later time.

```
Select CIRN Master of Record Menu Option: BGN Start/Restart CMOR Score
Calculation

This is the initial run of the CIRN CMOR patient activity score generator.
Requested Start Time: NOW// <RET> (OCT 08, 1998@15:42:19) Task#, 52323
queued
```

*Stop CMOR Score Calculation [RGCIRN CMOR STATUS]*

This option is used to stop the background job prior to its completion.

```
Select CIRN Master of Record Menu Option: HLT Stop CMOR Score Calculation
This option will stop the CIRN CMOR patient activity score generation
after it has completed calculating and filing the score for the current
patient.

Are you sure you want to do this? N// YES

Stop patient activity score generation after the current patient? N// YES

CIRN CMOR patient activity generation is flagged to stop after it has
completed the current patient. This may take a short time. Please check
the status later.
```

*Calculate Individual Patient CMOR Score [RGCIRN CMOR STOP]*

This option calculates a CMOR patient activity score for an individual patient. After it is calculated the score is filed in the Patient file.

```
Select CIRN Master of Record Menu: IND Calculate Individual Patient CMOR
Score
Select PATIENT NAME: VETERAN,JOHN Q 10-06-50 111111111 4A-MED
472-29 MED/ORANGE/3D YES SC VETERAN -- G G

This patient has an existing CMOR score of 2480 calculated on OCT 8,1998.

Do you want to calculate and file a new score for this patient? NO// Y YES

Working. Please standby...

CMOR Activity Score: 2480 filed for Veteran,John Q ssn: 111111111.
```

*CMOR Score Calculation Status [RGCIRN CMOR INDIV]*

This option is used to check on the progress of the Start/Restart background job.

```
Select CIRN Master of Record Menu: CSS CMOR Score Calculation Status
The CIRN CMOR Activity Score Generator

There are 278309 records in your PATIENT file.
The last record number is 7317156.
Last Patient Processed: VETERAN,JOHN Q    SSN: 111111111    [RECORD# 35]

The CMOR score initialization last started on OCT 8,1998@15:42:29
has processed 1 records and IS RUNNING.
```

*Duplicate Record by CMOR Score [RGCIRN CMOR DUP SCORES]*

The Duplicate Record by CMOR Score option provides a listing of the CMOR scores from the Duplicate Record file (#15). It will display the number of duplicates per every 100 points. For example: there may be 10 patients with a score between 100 and 199. A NO SCORE means that the pair of potential duplicates had no score (no activity in the last three years). The total entries for the Patient file (#2) and the Duplicates Records file (#15) are also displayed.

The example below shows that the site has 184 duplicate record pairs where at least one of the 2 records has evidence of patient activity in the past 3 years. This will provide users with a better picture regarding the number of duplicate records that should be merged prior to the site initializing their Patient file (#2) against the Master Patient Index (MPI).

```
Duplicate Record Count by CMOR Score                                Page: 1
                                                                    Date: JUL 23,1998@16:05
-----
This report is drawn from the Duplicate Record file (#15) with
CMOR scores from the PATIENT file, CMOR ACTIVITY SCORE field.

- If both members of a pair have a score of zero the pair is
  counted in the '0' group.
- If one or both members of the pair have a score greater than
  zero, that pair is counted in the group for the higher score.
- If neither member of the pair have a CMOR score, the pair is
  counted in the 'NO SCORE' group.
```

Score Range	Count
-----	-----
1 - 99	24
100 - 199	6
200 - 299	2
300 - 399	3
400 - 499	7
500 - 599	3
600 - 699	2
700 - 799	2

900 - 999	1
1000 - 1099	1
1100 - 1199	4
1200 - 1299	1
1300 - 1399	1
1400 - 1499	1
1500 - 1599	2
1600 - 1699	1
1700 - 1799	2
1800 - 1899	1
2100 - 2199	1
2300 - 2399	1
2400 - 2499	2
2500 - 2599	1
2600 - 2699	1
2800 - 2899	1
3000 - 3099	1
3200 - 3299	1
3500 - 3599	1
7400 - 7499	1
7700 - 7799	1
NO SCORE	108
TOTAL Potential Duplicates (15):	184
TOTAL Patients (2):	77160..

### *Duplicate Record Statistics [RGCIRN CMOR DUP STATS]*

This option provides the user with the percentiles of the patients in the various status categories for merge and verification status.

Select CIRN Master of Record Menu Option: **STAT** Duplicate Record Statistics  
Duplicate Record File Statistics Scan

Requested Start Time: NOW// <RET> (JUL 08, 1998@13:29:07)  
Task# 201539 queued to run.

When the scan is completed, you will receive a mail message similar to the following:

```

Subj: Duplicate Record Counts: ALBANY, NY [#93979] 08 Jul 98 13:29 13 Lines
From: POSTMASTER in 'IN' basket. Page 1 **NEW**
-----
Duplicate Record (^DPT) Statistics Run Date: JUL 8,1998@13:29:11
ALBANY, NY (500)
Counts by: Merge Status and Match Percentile:

Merge Status: READY
Percentile: 80 9
Percentile: 90 23
Percentile: 100 13

Merge Status: MERGED
Percentile: 100 4

```

Merge Status: UNKNOWN	
Percentile: 60	27
Percentile: 70	37
Percentile: 80	42
Percentile: 90	16
Percentile: 100	13
Counts by: Verification Status and Match Percentile:	
Verification Status: POTENTIAL DUP., UNVERIF	
Percentile: 60	27
Percentile: 70	37
Percentile: 80	36
Percentile: 90	1
Percentile: 100	1
Verification Status: REQUIRES RESOLUTION	
Percentile: 80	6
Percentile: 90	15
Percentile: 100	12
Verification Status: VERIFIED DUPLICATE	
Percentile: 80	9
Percentile: 90	23
Percentile: 100	17
Select MESSAGE Action: IGNORE (in IN basket)//	

**NOTE:** After CIRN PD/MPI is installed, the Merge Utility (XT\*7.3\*23) can not be used to merge patient records. Sites should make every attempt to resolve potential duplicates in the Pre-installation phase. Once sites initialize against the MPI, any unresolved duplicates will have to be held in abeyance until the merge software becomes "CIRN aware". It is recommended that the option to merge patient records be placed out of order until that time.

## Patient File Initialization to MPI [MPIFINIT DPT TO MPI]

This option may be scheduled to run evenings and weekends. It can also be stopped and restarted.

Each patient processed will be looked up in the Master Patient Index - Austin (MPI) using SSN (unless pseudo or missing SSN), Date of Birth and Name. If not found in the MPI, the MPI will add this patient to the MPI, assign the integration control number (ICN), the initial CMOR, create a treating facility list. This information will be added to the site's Patient file (#2) when the return message from the MPI is processed..

The CMOR will be the first site at which the MPI encounters that patient. If a patient match is found in the MPI, the site will be added as a treating facility and the ICN, CMOR, and Treating Facility List will be added to the site's Patient file. Since the initial CMOR assignment may not be correct, CIRN PD/MPI includes other options for a background comparison of CMOR Activity Scores and a manual way to request changing the CMOR.

```

Select CIRN Initialization Menu Option: Patient File Initialization to MPI
START TIME: NOW// <RET> (OCT 23, 1998@19:02)
STOP TIME: OCT 23, 1998@19:02// T+1@2400 (OCT 24, 1998@24:00)
TASK #: 5048822
VAH,ROU>

```

Stop time is set to T+1 at 2400 to give the job plenty of time to run. It may not take that long.

The option builds and processes batch messages that contain 100 (at most) patient names each. You can monitor the progress using the Systems Link Monitor option in the HL7 V. 1.6 package.

```

HL MAIN MENU          HL7 Main Menu

 1      V1.5 OPTIONS ...
 2      V1.6 OPTIONS ...
 3      Activate/Inactivate Application
 4      Print/Display Menu ...
 5      Purge Message Text File Entries

Select HL7 Main Menu Option: 2  V1.6 OPTIONS

 1      Communications Server ...
 2      Interface Workbench
 3      Message Requeuer
Select V1.6 OPTIONS Option: 1  Communications Server

 1      Edit Communication Server parameters
 2      Manage incoming & outgoing filers ...
 3      Monitor incoming & outgoing filers
 4      Start LLP
 5      Stop LLP
 6      Systems Link Monitor
 7      Logical Link Queue Management ...
 8      Report
 9      View Transmission Log
      Restart All Links and Filers
      Shut Down All Logical Links

Select Communications Server Option: 6  Systems Link Monitor

```

These messages will first show up on the MPIVA entry in the MESSAGES TO SEND and then the MESSAGES SENT columns. Within approximately five minutes (it may be longer if other sites are also initializing during this time), batch acknowledgements will begin to show up on the site's node (in the following example, VAWPB) first in the MESSAGES RECEIVED and then the MESSAGES PROCESSED columns.

## Example of a System Link Monitor:

SYSTEM LINK MONITORY for BAY PINES (Test System)						
NODE	MESSAGES RECEIVED	MESSAGES PROCESSED	MESSAGES TO SEND	MESSAGES SENT	DEVICE ON-LINE	STATE
RA-PHIL	5	5	5	5	Y	Idle
NPTF	0	0	7	7	Y	Idle
VABAY	8	8	0	0		0 Server
MPIVA	0	0	20	20	Y	Idle
VAWPB	0	0	1	1	Y	Idle
Number of incoming filers running => 2						
Number of outgoing filers running => 2						
Select a Command:						
(N) NEXT (B) BACKUP (Q) QUIT (A) ALL LINKS (S) SCREENED (?) HELP:						

If messages do not appear to be going out or if the state of the link is "openfail", see Appendix G - Trouble Shooting in the *Clinical Information Resource Network Patient Demographics (CIRN-PD) and Master Patient Index (MPI) Installation And Implementation Guide*.

## CMOR Comparison Menu ... [MPIF COMP MAIN]

CMOR Comparison Menu ... [MPIF COMP MAIN]

CMOR Comparison Process Status [MPIF CMOR COMP STATUS]

Begin CMOR Comparison MPIF CMOR COMP BATCH]

Stop/Restart CMOR Comparison Process [MPIF CMOR COMP STOP/RESTART]

The CIRN Master of Record (CMOR) comparison options are used only after your site has completed loading the MPI database at Austin, and all other MPI initialization steps have been completed. Plus scheduling with other sites initializing has been arranged.

**Note:** Remember, the options are being discussed in the order they should be performed rather than in the order that they appear on the menu.

### *Begin CMOR Comparison [MPIF CMOR COMP BATCH]*

This option finds all patients that have an ICN for which your site is a treating facility but is not the CMOR. It sends a batch HL7 message to the CMOR sites requesting that the two sites' CMOR Activity Score be compared. Processing of these requests is done as a background job on the CMOR system. The following rules are used to determine the CMOR for each patient in the message:

As each patient is found on the non-CMOR system, a check is done to see if the score calculation date is older than 90 days, the score is recalculated for that patient and the CMOR Activity Score (#991.06) and Score Calculation Date (991.07) fields in the Patient file (#2) are updated.

- If the score calculation date on CMOR is older than 90 days, the CMOR's score is recalculated and the CMOR Activity Score (#991.06) and Score Calculation Date (991.07) fields in the Patient file (#2) are updated
- If the incoming score is greater than the CMOR's score and the difference is greater than 80%, the patient's CMOR is updated to the new site and an A31 Change CMOR message is issued to all subscribers including the MPI.
- If the incoming score equals the CMOR's score or is close according to rules, nothing happens.
- If the incoming score is less than the CMOR's score, nothing happens.

The CMOR Comparison menu is found on the CIRN Initialization menu.

This option is tasked to run in the background. It can be stopped and restarted. If you choose to stop and restart, it will begin processing again with the next patient record from where it was stopped.

```
Select CMOR Comparison Menu Option: BEGIN CMOR Comparison
This process will take a while to complete. Are you sure? NO// YES
Requested Start Time: NOW// <RET> (OCT 27, 1998@18:00:23) Task#, 5143912
queued
```

### *CMOR Comparison Process Status [MPIF CMOR COMP STATUS]*

Use this option to view the progress of the CMOR Comparison background job. It displays the current patient being processed including the task number and the run status.

Select CMOR Comparison Menu Option: **CMOR** Comparison Process Status  
The CMOR Comparison process has been tasked with task # 4911797. The  
process is currently running and the last patient  
was VETERAN,JOHN Q ssn # 111111111 CMOR= GAINESVILLE

### *Stop/Restart CMOR Comparison Process [MPIF CMOR COMP STOP/RESTART]*

This option can be used to stop or restart the CMOR Comparison background job. If the job was stopped before completion and then restarted, the job will start up where it left off.

### **IRM CIRN IRM Menu ... [RG IRM MENU]**

#### **CIRN Event Queue Manager ... [RGEQ MGR]**

The event queue feature consists of the CIRN Event Queue global, ^RGEQ( , and the CIRN Event Queue background job (daemon). Triggering events can come from a variety of sources. These include demographic and clinical subscription control updates and all clinical data updates for active CIRN data sources within the **VSTA** clinical application software suite. These updates may either generate an HL7 message to a remote source (i.e. subscription or CIRN Master of Record (CMOR) request to remote facilities) or they may generate updates to the Clinical Repository which, in turn, may be transmitted to other treating facilities. The CIRN Event Queue must be started and running for several types of messaging updates to occur including CIRN Master Of Record Requests.

Activities that use the CIRN Event Queue for transmission will place a stub record into the CIRN Event Queue global. This is a temporary storage area for these records. As the events in the Event Queue are processed, these records are removed from the Event Queue global. When triggering events place a "stub" record in the CIRN Event Queue global control is returned immediately to the **VSTA** software application or option to minimize the impact on the triggering software application or its users.

#### **CIRN Event Queue Manager [RGEQ MGR]**

Start CIRN Event Queue [RGEQ START]  
Halt CIRN Event Queue [RGEQ STOP]  
Error Processing CIRN Event Queue [RGEQ ERROR]  
CIRN Event Queue Class Statistics [RGEQ STATS]



*Start CIRN Event Queue [RGEQ START]*

This option is used to restart all the event queues at one time. If a single event queue has been stopped independently from the others, you will need to use the Stop CIRN Event Queue option to restart it.

For example: There are three queues,

MPIF CMOR REQUEST  
MPIF CMOR RESULT  
SCN\_REQ

If the MPIF CMOR RESULT queue has been individually halted prior to the entire CIRN event queue being stopped, the Start CIRN Event Queue option will only restart the MPIF CMOR REQUEST and SCN\_REQ queues. The Stop CIRN Event Queue option must be used to restart the MPI CMOR RESULT queue.

```
Select CIRN Event Queue Manager Option: Start CIRN Event Queue
Are you sure you want to start the CIRN processor? NO// YES ... done.
```

*Halt CIRN Event Queue [RGEQ STOP]*

This option allows you to stop event queue processing for the entire CIRN process or for a specific event type and to restart processing for a specific event.

**Stop Processing for CIRN**

```
Select CIRN Event Queue Manager Option: Stop CIRN Event Queue
Do you want to stop ALL CIRN processing? NO// YES ... Done
```

**Stop Processing for a Specific Event**

```
Select CIRN Event Queue Manager Option: Stop CIRN Event Queue
Do you want to stop ALL CIRN processing? NO// <RET>
Do you want to ENABLE/DISABLE a particular data class? NO// y YES
Select CIRN Data Class: ??

Choose from:
    MPIF CMOR REQUEST
    MPIF CMOR RESULT
    SCN_REQ

Select CIRN Data Class: MPIF CMOR RESULT

NOTE: This class is currently enabled
    ...Do you want to DISABLE? NO// y YES ...Done.
```

### Restart Processing for a Specific Event

```
Select CIRN Event Queue Manager Option: Stop CIRN Event Queue
Do you want to stop ALL CIRN processing? NO// <RET>
Do you want to ENABLE/DISABLE a particular data class? NO// YES
Select CIRN Data Class: MPIF CMOR RESULT

NOTE: This class is currently disabled
...Do you want to ENABLE? NO// y YES ...Done.
```

### *Error Processing CIRN Event Queue [RGEQ ERROR]*

When an event is being processed, under some conditions it may not process due to software or system errors. These events are saved for processing at a later time once the error condition is eliminated. This option processes all events that did not complete due to an error condition.

```
Select CIRN Event Queue Manager Option: CIRN Event Queue Error Processing
Do you want to requeue all the exception events? NO// YES...Done.
```

You can also choose to re-queue individual events.

```
Select CIRN Event Queue Manager Option: CIRN Event Queue Error Processing

Do you want to requeue all the exception events? NO// n NO
Select CIRN EVENT ASSOCIATION: ??

Choose from:
    MPIF CMOR REQUEST
    MPIF CMOR RESULT
    SCN_REQ

Select CIRN EVENT ASSOCIATION: MPIF CMOR RESULT
...No exceptions exist for this type of data class
```

### *CIRN Event Queue Class Statistics [RGEQ STATS]*

This option produces a report by date of the number of events processed and number of events that produced an error.

```
Select CIRN Patient Admin Coordinator Menu Option: 3 CIRN Event Queue Class
Statistics
* Previous selection: DATE not null
START WITH DATE: FIRST// <RET>
DEVICE: <RET> UCX/TELNET RIGHT MARGIN: 80// <RET>
```

CIRN Data Class Statistics		APR 20,1999	14:06	PAGE 1	<<<<
SHOULD GO ON FIRST LINE					
TYPE		PROCESSED	ERRORS		
-----					
DATE: FEB 20,1999					
CH_BL		114			
		-----	-----		
SUBTOTAL		114	0		
DATE: FEB 21,1999					
SCN_REQ		1			
		-----	-----		
SUBTOTAL		1	0		
DATE: MAR 7,1999					
SCN_REQ		2			
		-----	-----		
SUBTOTAL		2	0		
DATE: MAR 15,1999					
QRY		2			
		-----	-----		
SUBTOTAL		2	0		
DATE: APR 3,1999					
MPIF CMOR RESULT		1			
MPIF CMOR REQUEST		1			
		-----	-----		
SUBTOTAL		2	0		
DATE: APR 6,1999					
MPIF CMOR REQUEST		1			
		-----	-----		
SUBTOTAL		1	0		
		-----	-----		
TOTAL		122	0		

## HL7 Exception Utility [RGHL EXCEPTION]

Occasionally, an HL7 message can not be processed as received or a message cannot be created because critical data are missing. These events are logged in an exception file for manual review and resolution. The HL7 Exception Utility provides the tools to view exceptions, reprocess the associated messages or events after taking corrective action, and then delete them from the exception file.

Upon invoking the utility, the following screen appears. You may use the cursor control keys on your terminal to maneuver among the listed exceptions.

**NOTE: The Return key is reserved for exiting the screen. Do not use the return key after selecting exceptions or actions.**

HL7 Exception Utility		36 exceptions
Press ? for help		
===== [BY FREQ] ===== [DETAIL] =====		
9	Missing patient identifier: 10	
1	TF Update Failed in Pivot file: DFN= 7169873 Treating Facility= 500	
-----		

If the ? key is typed, the following help message is displayed indicating other keys that have special meaning:

D	Toggle detail view
I	Inquire about exception
O	Send log to output device
P	Purge exception log
R	Reprocess messages/events with marked exceptions
S	Toggle sort by exception/frequency
T	Toggle mark/unmark for all entries
U	Update display
V	View messages/events with marked exceptions
@	Delete marked exceptions
<space>	Mark/unmark exception
<return>	Exit

D	Toggles between detail view, in which exceptions are sorted by both the exception type and the exception text, and the normal view, in which exceptions are sorted by the exception type only and the exception text is not displayed.
I	Causes a detailed information about the exception under the cursor to be displayed. This information typically describes the cause of the exception and the measures required to resolve the exception.
O	Sends output to a printer.
P	Invokes the exception log purge logic. You are first prompted for a date before which exceptions will be purged. You are then asked if you want to preserve entries with active exceptions. If you respond yes to this prompt, entries in the CIRN HL7 Exception file that have active exceptions will be preserved. Otherwise, all entries prior to the specified date will be purged.
R	Causes all messages and events associated with marked exceptions to be reprocessed. Once this process is set in motion, you may abort it at any time by entering "^". Messages are processed in the foreground while events are queued for processing in the background.
S	Toggles the sort order between "by frequency" and "by exception". The default sort order is by frequency.
T	Toggles the marked state of all exceptions. Exceptions that are marked become unmarked, and vice versa.
U	Updates the display. This causes the utility to reread the contents of the CIRN HL7 Exception file. Any exceptions generated since the last display update will now be displayed.
V	DISABLED in CIRN-PD V. 1.0.
@	Causes all marked exceptions to be purged from the CIRN HL7 Exception file.
<space>	Exits the utility.
<return> or <enter>	Exits the utility.

In addition to the listed keys, the arrow keys and the page up/page down keys (or their equivalents) are also active and may be used to maneuver through the text window.

# Files

## *Number Space*

The CIRN package file range is 990-995 and 997-999.99.(File range 996-996.99 is reserved for Extensible Editor.)

## *File Information*

The complete CIRN package is comprised of two modules, CIRN Clinical Repository and CIRN Patient Demographics. The CIRN Clinical Repository will be released in CIRN V. 1.5.

This manual covers those elements that are used by the CIRN Patient Demographics module. Files within the CIRN number space which are used exclusively by CIRN Clinical Repository module are not covered. They will be discussed in the CIRN Clinical Repository Technical manual when CIRN V. 1.5 is released. A separate Technical manual is available for MPI **VSTA**.

### **File 990.8                   CIRN REPOSITORY SITE PARAMETER**

This file contains settable parameters that control the behavior of various components of the CIRN Object Repository.

### **File 991.1                   CIRN HL7 EXCEPTION LOG**

This file contains exception messages logged during the generation of outbound messages and the processing of inbound messages. Some fields apply only for entries logged by message generation routines, others only to message processing routines, and others to both.

This file should not be edited directly. Instead, use the exception management utilities to manage entries in this file.

### **File 991.11                CIRN HL7 EXCEPTION TYPE**

This file lists the types of exceptions that can be logged and additional information about the exceptions.

You may edit the Action (#2) and Mail Group (#6) fields in this file to suit your needs. No other fields should be modified.

**File 991.8 CIRN SITE PARAMETER**

This file stores generic site parameters for the CIRN package. Only one entry (entry number 1) should exist in this file. This file is exported in the CIRN Pre-Installation and Implementation V. 0.5 release.

Field #	Field Name	Description
991.8,30	CMOR Comp Last Patient	This was the last patient processed in the CMOR comparison process.
991.8,31	CMOR Comp Started Date/Time	This is the date/time the CMOR comparison process began.
991.8,32	CMOR Comp Stopped Date/Time	When the CMOR comparison has stopped, (either automatically or manually) the time is recorded in this field.
991.8,33	CMOR Comp Status	This is the status of the CMOR comparison process in your system.
991.8,34	CMOR Comp Last Task #	This is the last task number that the CMOR comparison ran on.
991.8,35	CMOR Comp Flag	This flag allows the user to stop the CMOR comparison process.

Input Templates:

RG MERGE

MPIF SITE PARAMETERS

**File 995 CIRN EVENT ASSOCIATION**

This file holds definitions of CIRN events that occur. When an event occurs, an entry is placed into a queue and is associated with an entry in this file. This file will determine how the event is processed, such as: The routine to call to process event and related HL7 Protocol.

Consider each event type is placed on it's on queue, this file also determines characteristics of the queue itself.

**File 995.1 CIRN EVENT EXCEPTION**

If a soft-error or hard-error occurs while processing a CIRN event, an entry is placed in this file and the event is removed from the active queue. This file holds all necessary information to research the error and to re-process the event after the error-condition is corrected.

Input Templates:

RGEQ NEW EXCEPTION

## File 995.2 CIRN EVENT STATISTICS

For each event association (or event type) statistics are automatically store each time the event is triggered. Statistics are grouped by date and event type.

Print Template:

RGEQ STAT

Sort Template:

RGEQ STAT

Input Templates:

RGEQ NEW STATISTIC

## File Information

The following information on files introduced by CIRN-PD V. 1.0 is broken down according to the portion of the Build the file appears in.

### *CIRN Patient Demographics Files*

FILE #	NAME	Global	UP DATE DD	SEND SEC CODE	DATA COMES W/FILE	SITE DATA	RSLV PTS	USER OVER RIDE
991.8	CIRN SITE PARAMETER	^RGSITE(991.8,	YES	NO	NO			

### *CIRN Messaging Components*

There are no files associated with the CIRN Messaging Components.

### *CIRN Messaging Support*

FILE #	NAME	Global	UP DATE DD	SEND SEC CODE	DATA COMES W/FILE	SITE DATA	RSLV PTS	USER OVER RIDE
990.8	CIRN REPOSITORY SITE PARAMETER	^RGSITE("COR",	YES	NO	YES	OVER	NO	NO
991.1	CIRN HL7 EXCEPTION LOG	^RGHL7(991.1,	YES	YES	NO			
991.11	CIRN HL7 EXCEPTION TYPE	^RGHL7(991.11	YES	YES	YES	OVER	YES	NO
995	CIRN EVENT ASSOCIATION DATA SCREEN: I \$P(^ (0),U)="SCN_REQ" !( \$P(^ (0),U,1) ["MPIF ")	^RGEQASN(	YES	YES	YES	OVER	YES	NO
995.1	CIRN EVENT EXCEPTION	^RGEQEXC(	YES	YES	NO			
995.2	CIRN EVENT STATISTICS	^RGSTAT(995.2,	YES	YES	NO			

*Master Patient Index VISTA*

FILE #	NAME	Global	UP DATE DD	SEND SEC CODE	DATA COMES W/FILE	SITE DATA	RSLV PTS	USER OVER RIDE
984.1	MASTER PATIENT INDEX (LOCAL NUMBERS)	^MPIF(984.1,	YES	YES	NO			
984.5	MPI CHECKDIGIT	^MPIF(984.5,	YES	YES	YES	OVER	NO	NO
984.8	MPI ICN BUILD MANAGEMENT	^MPIF(984.8,	YES	YES	YES	OVER	NO	NO
984.9	MPIF CMOR REQUEST	^MPIF(984.9,	YES	YES	NO			

*DG\*5.3\*231*

FILE #	NAME	Global	UP DATE DD	SEND SEC CODE	DATA COMES W/FILE	SITE DATA	RSLV PTS	USER OVER RIDE
2	PATIENT Partial DD: subDD: 2 fld: .02 fld: .03 fld: .05 fld: .08 fld: .09 fld: .111 fld: .1112 fld: .112 fld: .113 fld: .114 fld: .115 fld: .117 fld: .131 fld: .132 fld: .211 fld: .219 fld: .2403 fld: .301 fld: .302 fld: .31115 fld: .323 fld: .351 fld: 391 fld: 1901	^DPT(	YES	YES	NO			



# Routines

The following routines distributed with CIRN PD/MPI 1.0 are broken down according to the portion of the Builds they are in.

## CIRN Patient Demographics

RGJCTS01	Subscription Control Startup Utility TO CMOR
RGJUSITE	Routine to hold API for the CIRN Parameter file 991.8
RGMTAUD	CIRN AUDIT file Print for a Specified Patient
RGMTAUDP	
RGMTDPCT	Count Entries for ^DPT in Dup. Record file
RGMTDPSC	Count duplicate record entries by CMOR score range
RGMTTFL	Treating Facility List Statistics
RGMTBUL1	
RGPDENV	Environment Check
RGPDPST	Post Init
RGPRELIG	Test and compare Files 8 and 8.1
RGPRSSN	CIRN Pseudo/Missing SSN Report
RGRSBULL	RGRSTEXT Bulletin routine
RGRSDYN	Build dynamic link list for a patient
RGRSDYN1	Build dynamic link list for a TFU
RGRSDYN2	Build dynamic link list for sensitivity
RGRSENS	Pt sensitivity parser/filer
RGRSM SH	Registration message parser for CIRN
RGRSPAR1	Registration message parser for CIRN TFU
RGRSPAR2	Sensitivity message parser for CIRN
RGRSPARM	Edit SEND/STOP/SUSPEND parameter
RGRSPARS	Registration message parser for CIRN
RGRSPT	High level routine for parsing and filing
RGRSUTIL	CIRN Utilities
RGRSUTL2	Utilities for CIRN
RGRSWPT	Active patient check
RGVCCMR1	CIRN CMOR activity score generator (part 1)
RGVCCMR2	CIRN CMOR activity score generator (part 2)
RGRSZZPT	Utility for CIRN

## CIRN Messaging Support

RGEQ	Queue processor
RGEQDMN	Dequeue processor
RGEQDMN1	Dequeue processor continued
RGEQERR	Reprocess data class error
RGEQEXC	Error processor
RGEQRPT	Print CIRN queue statistics
RGEQSTAT	Statistics
RGEQSUB	Dequeue processor
RGHLEXC	HL7 exception handling utilities
RGHLEXC1	Generate exception statistics report
RGHLLOG	Log message processing info
RGHLPOST	CIRN Messaging Build Postinit
RGHLUT	HL7 message processing utilities
RGHOUT	HL7 message generation utilities
RGJCREC	CIRN Subscription Processor
RGJCSUB	CIRN Subscription Generator
RGMSENV	Environment Check

## Master Patient Index *VISTA*

MPIF001	APIs for ICN, IEN, CMOR information
MPIFA31I	Process ADT-A31 message from MPI
MPIFAPI	APIs for local ICNs
MPIFBT1	Batch query to MPI
MPIFBT2	Batch response from MPI
MPIFCMOR	Set and broadcast CMOR changes
MPIFDEL	Delete patient from MPI
MPIFEDIT	Request a CMOR for patient;
MPIFHL7	Processing incoming hl7 message;
MPIFINQ	Miscellaneous functions for CMOR
MPIFMER	Merge patient ICN
MPIFNEW	Create new request for patient demographic change

MPIFPRE	Pre Installation
MPIFPST	Post-initialization
MPIFQ0	CIRN Query Handler top level
MPIFQ1	CIRN Query Handler
MPIFQED	Add patient returned in query
MPIFQUE3	Generate Batch message for comparison of CMOR score
MPIFQUE4	Process the CMOR COMPARISON request
MPIFQUE5	Process the RESULT from CMOR COMPARISON request
MPIFREQ	Process a CMOR request from CIRN Event Queue
MPIFRES	Batch processing to the MPI of locally assigned ICNs and patients added to the Patient file (#2) by means other than PIMS options.
MPIFRESS	Processes approve/disapprove CMOR change requests
MPIFREX	Review CMOR request
MPIFRTC	Get ICN from MPI using real time connection
MPIFSAQ	Stand alone query
MPIFSPC	Master Patient Index system check sum routine
MPIFUTL	CMOR Utilities
MPIFVTQ	Build data to query MPI response process (ADDPAT)

*DG\*5.3\*231*

DG53231P	The post-install routine DG53231P is invoked to re-compile all Print Templates and Input Templates for the affected fields.
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# Exported Options

## ***CIRN Master Menu:***

### **PRE CIRN Pre-Implementation Menu ... [RGPR PRE-IMP MENU]**

Pseudo-SSN Report [RGPR PRE-IMP SSN REPORT]  
Eligibility Code Files Report [RGPR PRE-IMP ELIG REPORT]  
Marital Status File - Map Non-Standard Entries [DG172 PRE-IMP MAR STAT MAP]  
Religion File - Map Non-Standard Entries [DG172 PRE-IMP RELIGION MAP]  
Begin Religion/Marital Status Conversion [DG172 PRE-IMP START CONVERSION]  
Stop Religion/Marital Status Conversion [DG172 PRE-IMP STOP CONVERSION]  
CIRN Master of Record Menu ... [RGCIRN CMOR MAIN]  
    BGN Start/Restart CMOR Score Calculation [RGCIRN CMOR START]  
    HLT Stop CMOR Score Calculation [RGCIRN CMOR STOP]  
    IND Calculate Individual Patient CMOR Score [RGCIRN CMOR INDIV]  
    CSS CMOR Score Calculation Status [RGCIRN CMOR STATUS]  
    DRS Duplicate Record by CMOR Score [RGCIRN CMOR DUP SCORES]  
    STAT Duplicate Record Statistics [RGCIRN CMOR DUP STATS]

### **NTL CIRN Initialization Menu ... [RGINIT MENU]**

CIRN Master of Record Menu ... [RGCIRN CMOR MAIN]  
    BGN Start/Restart CMOR Score Calculation [RGCIRN CMOR START]  
    HLT Stop CMOR Score Calculation [RGCIRN CMOR STOP]  
    IND Calculate Individual Patient CMOR Score [RGCIRN CMOR INDIV]  
    CSS CMOR Score Calculation Status [RGCIRN CMOR STATUS]  
    DRS Duplicate Record by CMOR Score [RGCIRN CMOR DUP SCORES]  
    STAT Duplicate Record Statistics [RGCIRN CMOR DUP STATS]  
Patient File Initialization to MPI [MPIFINIT DPT TO MPI]  
CMOR Comparison Menu ... [MPIF COMP MAIN]  
    CMOR Comparison Process Status [MPIF CMOR COMP STATUS]  
    Begin CMOR Comparison [MPIF CMOR COMP BATCH]  
    Stop/Restart CMOR Comparison Process [MPIF CMOR COMP STOP/RESTART]

### **IRM CIRN IRM Menu ... [RG IRM MENU]**

CIRN Event Queue Manager ... [RGEQ MGR]  
    Start CIRN Event Queue [RGEQ START]  
    Halt CIRN Event Queue [RGEQ STOP]  
    Error Processing CIRN Event Queue [RGEQ ERROR]  
    CIRN Event Queue Class Statistics [RGEQ STATS]  
HL7 Exception Utility [RGHL EXCEPTION]

**CORD CIRN Patient Admin Coordinator Menu ... [RG ADMIN COORD MENU]**

- PM Patient Merge Utilities ... [RG MERGE PATIENT]
  - Edit Merge Parameter [RG MERGE EDIT PARAMETER]
  - Patient Data Review [VAFC EXCEPTION HANDLER]
- GS Generate a Patient Subscription Request [RG SUBSCRIBE]
- EQ CIRN Event Queue Class Statistics [RGEQ STATS]
- SP Site Parameters Edit for CMOR [MPIF SITE PARAMETER]
- CMOR CMOR User Menu ... [RGCIRN CMOR USER MENU]
  - IND Calculate Individual Patient CMOR Score [RGCIRN CMOR INDIV]
  - CSS CMOR Score Calculation Status [RGCIRN CMOR STATUS]
  - DRS Duplicate Record by CMOR Score [RGCIRN CMOR DUP SCORES]
  - STAT Duplicate Record Statistics [RGCIRN CMOR DUP STATS]
- ADU CIRN Patient Admin User Menu ... [RG ADMIN USER MENU]
  - Patient Data Review [VAFC EXCEPTION HANDLER]
  - CIRN Master of Record (CMOR) Request ... [MPIF CMOR MGR]
    - Batch Review Requests [MPIF BATCH REVIEW]
    - Display CIRN Master of Record Request [MPIF VIEW REQUEST]
    - New Request [MPIF NEW REQUEST]
    - Received Requests Report [MPIF RECEIVED REQUESTS]
    - CIRN Master of Record Request Review [MPIF REVIEW REQUEST]
    - Sent Request Report [MPIF SENT REQUESTS]
    - Edit CMOR Change Request [MPIF EDIT REQUEST]
- LOG Patient Audit Log Reports ... [RG TRAN/AUD AUD REP]
  - Patient Audit File Print [RGMT AUDIT PRINT]
  - Treating Facility List Statistics [RGMT AUDIT TF STATISTICS]
- INQ Subscription Status Inquiry [RG SUBSCRIPT STAT INQ]
- MPI Master Patient Index Menu ... [MPIF VISTA MENU]
  - Single Patient Initialization to MPI [MPIF IND MPI LOAD]
  - Display Only Query [MPIF DISPLAY ONLY QUERY TO MPI]
  - Inactivate Patient from MPI [MPIF PAT INACT]
  - Local/Missing ICN Resolution Background Job [MPIF LOC/MIS ICN RES]

**ADU CIRN Patient Admin User Menu ... [RG ADMIN USER MENU]**

- Patient Data Review [VAFC EXCEPTION HANDLER]
- CIRN Master of Record (CMOR) Request ... [MPIF CMOR MGR]
  - Batch Review Requests [MPIF BATCH REVIEW]
  - Display CIRN Master of Record Request [MPIF VIEW REQUEST]
  - New Request [MPIF NEW REQUEST]
  - Received Requests Report [MPIF RECEIVED REQUESTS]
  - CIRN Master of Record Request Review [MPIF REVIEW REQUEST]
  - Sent Request Report [MPIF SENT REQUESTS]
  - Edit CMOR Change Request [MPIF EDIT REQUEST]

## ***Menu Assignment***

<b>Menu</b>	<b>Assign to:</b>
CIRN Master Menu [RGMGR]	IRM personnel
CIRN Initialization Menu [RGINIT MENU]	IRM personnel
CIRN IRM Menu ... [RG IRM MENU]	IRM personnel
CIRN Patient Admin Coordinator Menu ... [RG ADMIN COORD MENU]	Patient Administration/MAS Coordinator or ADPAC
CIRN Patient Admin User Menu ... [RG ADMIN USER MENU]	Patient Administration/MAS users

- **Send/Suspend/Stop CIRN Message Processing [MPIF CMOR COMP STOP/RESTART]**

The Send/Suspend/Stop CIRN Message Processing option is provided as a standalone option. It is **NOT** to be attached to any menu. This option allows IRM to set the message activity state (Send/Suspend/Stop). The normal state is Send. Suspend provides a means to temporarily hold messages for later transmission while a transmission problem is being solved. Stop is used only to shut down CIRN permanently.





# Archiving and Purging

## Archiving

There are no application-specific archiving procedures or recommendations for the Clinical Information Resource Network (CIRN) package.

## Purging

There are no purging instructions for CIRN PD. The HL7 and MailMan packages have purging options that should be used to control the large number of HL7 messages that CIRN PD and MPI produce. Since IRM personnel have the option to use either HL7 or MailMan as the messaging component for sending and receiving data from the MPI, see the associated product documentation, listed below, for purging instructions specific to these packages:

- *DHCP Health Level Seven (HL7) Technical Manual*, Version 1.6 and up.
- *VA Electronic Mail System (MailMan) Technical Manual and Systems Management Guide*, Version 7.1 and up.



# Callable Routines/Entry Points/ Application Programmer Interfaces (APIs)

This section documents the APIs supported by the CIRN-PD package.

## *CIRN Messaging Support*

### Exception Handling

These API calls support the logging, review, and maintenance of exceptions created during the generation of outbound and processing of inbound HL7 messages.

#### **START^RGHLLOG(MSG,EVENT,PARAM)**

MSG	If the log entry is for the processing of an inbound message, this parameter should contain the IEN of the message in file 772. Otherwise, it should be null or missing.
EVENT	If the log entry is for the creation of an outbound message, this parameter should contain the name of the event type. This corresponds to the .01 field of the CIRN EVENT ASSOCIATION file (e.g., outpatient pharmacy is "RX") and corresponds to the first subscript of the event queue entry.
PARAM	For outbound messages, this is the event stub corresponding to the second subscript of the event queue entry. For inbound messages, this is the entry point of the message processing routine (defaulting to ^RGHL if not specified).

This call prepares the CIRN HL7 Exception file to receive a new entry. If the Minimal Exception Logging option in the CIRN Repository Site Parameter file is set to no, this call creates the new entry immediately. Otherwise, creation of an entry is deferred until an exception is actually logged. This call sets up a local array called RGLOG which contains information about the log entry. The calling routine should NEW this variable before making the call and reserve its use.

Both the Event Queue Subdaemon and the Clinical Object Filer call this entry point for each event or message processed, so the processing routines associated with these do not need to make this call.

## **EXC^RGHLLOG(EXC,TEXT)**

EXC

This is the identifier of the exception type in the CIRN HL7 Exception Type file. Optionally, this parameter may be of the form “EXC^TEXT” where both parameters are specified in a single argument; or as “TEXT” where no exception type is specified. In this latter case, the exception type defaults to 18, which designates it to be unspecified.

TEXT

(optional)

This is supplemental text for the exception. This is typically used to supply more detail about the cause of the exception. As noted above, this parameter may be passed instead as part of the first parameter. This option is provided to accommodate previous exception logging practices that did not distinguish different exception types.

This call logs the exception whose type is EXC. Optionally, supplemental text may be provided in TEXT to further describe the nature of the exception. Note there are actually three formats for passing exception data via this call. This is to provide the highest possible level of backward compatibility for previous exception logging methods. Wherever possible, one should provide an exception type when logging an exception. This enables the exception utility to provide additional assistance to the package support team in taking necessary steps toward resolving the exception.

## **STOP^RGHLLOG(STATUS)**

STATUS

This is the completion status of the logged run. It should be 0 for success, 1 for failure.

This call closes the active log entry in the CIRN HL7 Exception Log file. If minimal exception logging is in effect (see above), and no exceptions have been logged, no action is taken. Otherwise, the completion status and completion timestamp are stored.

Both the Event Queue Subdaemon and the Clinical Object Filer call this entry point for each event or message processed, so the processing routines associated with these do not need to make this call.

## **DELLOG^RGHLEXC(IEN)**

IEN

This is the internal entry number of the entry in the CIRN HL7 Exception Log file that is to be deleted.

This deletes the specified entry from the CIRN HL7 Exception Log file. This should be the only means by which entries are removed from this file. This call ensures that any referenced message entries are freed for purging by the HL7 package.

## **PURGE^RGHLEXC(DATE,OPTION)**

DATE	This is the date, in VA FileMan format, before which all entries will be purged.
OPTION	This controls the behavior of the purge and can contain any of the following flags:

C = Purge only entries marked as successfully completed.  
 E = Do not purge entries that have logged exceptions.  
 I = Interactive mode shows spinning icon and permits aborting purge by typing the ^ character.

This call permits controlled purging of the CIRN HL7 Exception Log file. It is invoked by the automated purge option (RGCIRN Purge) and uses the DELLOG^RGHLEXC call to perform the deletions.

## **REPROC^RGHLEXC(MSG,RTN)**

MSG	This is the internal entry number of the message in file 772.
RTN (optional)	If specified, this is the entry point of the message processing routine. The default is ^RGHL, the Clinical Object Filer.

This call causes the message whose internal entry number is specified in MSG to be reprocessed by the Clinical Object Filer. If RTN is not specified, the entry point defaults to ^RGHL, which is the Clinical Object Filer. If the entry point DELETE^RGHL is specified, the observation data contained in the message is removed from the repository (see documentation for this API call for details).

This call effectively emulates the environment created by the HL7 Package when it receives an inbound message and invokes the message processing routine associated with that message. Thus, any routine designed to be invoked by the HL7 Package (version 1.6) to process an inbound message can be invoked through this call. At some point it is envisioned that the HL7 Package will incorporate this functionality into its toolset. At such time, calls to this entry point should be transitioned to the new entry point.

This call assumes that the first segment of the message is an MSH segment. It will reject any messages violating this assumption (e.g., a batch message).

## ***Master Patient Index - VISTA***

For information on callable routines associated with the Master Patient Index (MPI) **VISTA** package see the *Master Patient Index Technical Manual, Version 1.0*.



## External Interfaces

The CIRN package makes extensive use of HL7 messaging to ensure synchronization of patient records between sites. Please refer to the CIRN Patient Demographics, CIRN Clinical Repository HL7 Interface manuals, and Master Patient Index (MPI) **VSTA** HL7 Interface Specification manuals for complete details on message construction.





# External Relations

The following packages (fully patched) must be installed at the site:

***CAUTION!!***

**DO NOT INSTALL HL\*1.6\*39 in any TEST account!**

If you install this patch in your test account, you will link your test account to all the other production accounts. Since there are similarities (e.g., patient names/data) in test and production, it would not be good for data from the test account to be transmitted to the production account at another site.

Application	Version # and Patches
CIRN	Version 0.5
Scheduling	Version #5.3 SD*5.3*185
PIMS	Version #5.3 DG*5.3*149
HL7	Version #1.6 HL*1.6*17 HL*1.6*19 HL*1.6*26 HL*1.6*35 HL*1.6*39T16 (in Production account only) HL*1.6*41 HL*1.6*43 HL*1.6*51
MailMan	Version #7.1 XM*DBA*115
KERNEL	Version #8 XU*8*24 XU*8*41 XU*8*43 XU*8*44 XU*8*49 XU*8*67 XU*8*68 XU*8*69 XU*8*85 XU*8*94 XU*8.0*111
KERNEL Toolkit	Version #7.3 Duplicate Resolution patch XT*7.3*23
VA FileMan	Version #21
Extensible Editor	Version 2.6
Run Time Library	Version 2.1

Pharmacy	<p>If current version of Inpatient Medications is Version #4.5 PSJ*4.5*43</p> <p>If current version of Outpatient Pharmacy Version #6.0 PSO*6*156</p> <p>If running Computerized Patient Record System (CPRS), and: current version of Outpatient Pharmacy is Version #7.0 PSO*7*11</p>
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**NOTE:** If you are a Cache site and are planning to use a multi-threaded listener (which is recommended), you will need patch XU\*8.0\*78.

### *Integration Agreements*

The Database Integration Agreements (DBIAs) can be retrieved from Forum. The agreements fall into two categories: those controlled by other packages to which CIRN is a subscriber and those that CIRN controls to which other packages subscribe.

```

Username: FORUM
MISUSE OF THIS SYSTEM AND INFORMATION IN THIS SYSTEM IS A FEDERAL CRIME
*****
      NATIONAL VISTA SUPPORT (Including **FORUM**)
      CIO NATIONAL HELP DESK
      7:00am-6:30pm Central Time, Monday-Friday 1-888-596-HELP (4357)
      If you have trouble with the toll-free number,
      call 205-554-3460 through 205-554-3465
      (Tuscaloosa CIOFO)
AFTER-HOURS EMERGENCY VISTA SUPPORT (via Pager) (IRM Staff Only - Please)
AXP VMS/DSM Sites                ..1-800-368-7205
AVANTI Alpha/NT and OpenM Site   ..1-800-368-5787
NETWORKS                         ..1-800-278-4551
MS EXCHANGE                      ..1-800-368-7204
FORUM TECHNICAL SUPPORT          ..1-888-694-9406 or 1-800-865-1855
*****
      General ***FORUM*** Information
MODEMS:  301-427-3840 (24 lines/28.8k) and 301-427-3870 (8 lines/9.6k)
ACCESS INFORMATION:  Contact your local security officer or IRM
MailMan messages greater than 24 months old are purged monthly
Refer to the FORUM Policy and Guidelines for more information
*****
PLEASE NOTE: The capability to queue for later the delivery of a
message to a particular user or mail group does not seem to work
sometimes.  Until this problem is resolved, please use this capability
with caution.

Volume set: ROU:FORUM6  UCI: VAH  Device: _TNA9039: (152.128.3.77:3852)

ACCESS CODE:
VERIFY CODE:

```

```

Good morning
You last signed on today at 09:32

1      Mailman Menu ...
3      E3R Developer Menu ...
4      Patch User Menu ...
5      DBA ...
6      NOIS ...
7      SAGG Access to Albany CIOFO
8      Print Status of Pkg Implementation at Sites
9      Edit User Characteristics
10     ADP, COTS and OA Survey Menu ...
11     FORUM Primary Menu ...

Select Software Services Primary Menu Option: 5  DBA

      List Package file by Name
      List Package file by Prefix
      Find lo-high range of filenumbers
      Package file inquire
      Package file inquire by #
      Institution file inquire
      SACC Exemptions ...
      Domain file inquire
      Integration Agreements Menu ...
      Standards and Conventions
      MOP-UP ...
TCP    Print TCP/IP Domain Data Summary
      Children of a package
      GUI Standard Guidelines
      List Manager Standards ...
      SAGG Access to Albany CIOFO

Select DBA Option: integration Agreements Menu

0      Instructions for Entering IA's
1      Get New Integration #'s
2      Add/Edit
3      Inquire
4      Roll-up into Mail Message
5      File Agreements Menu ...
6      Routine Agreements Menu ...
7      Subscriber Package Menu ...
8      Custodial Package Menu ...
9      Print Other
10     Print Pending
11     Print Active
12     Print All
13     Supported References Menu ...
14     Private References Menu ...
15     Controlled Subscription References Menu ...
16     Agreement Lookup by Variable

```

Use Option 7 Subscriber Package Menu to view those agreements that CIRN subscribes to.

```
Select Integration Agreements Menu Option: 7  Subscriber Package Menu

1      Print ACTIVE by Subscribing Package
2      Print ALL by Subscribing Package

Select Subscriber Package Menu Option: 1  Print ACTIVE by Subscribing Package
START WITH SUBSCRIBING PACKAGE: FIRST//  CIRN
GO TO SUBSCRIBING PACKAGE: LAST//  CLinical Information Network Resourcez
DEVICE:  UCX DEVICE      Right Margin: 80//
```

Return to the Integration Agreements Menu and choose Option 8 Custodial Package Menu to view the agreements for which CIRN is the Custodian.

```
0      Instructions for Entering IA's
1      Get New Integration #'s
2      Add/Edit
3      Inquire
4      Roll-up into Mail Message
5      File Agreements Menu ...
6      Routine Agreements Menu ...
7      Subscriber Package Menu ...
8      Custodial Package Menu ...
9      Print Other
10     Print Pending
11     Print Active
12     Print All
13     Supported References Menu ...
14     Private References Menu ...
15     Controlled Subscription References Menu ...
16     Agreement Lookup by Variable

Select Integration Agreements Menu Option: 8  Custodial Package Menu

1      ACTIVE by Custodial Package
2      Print ALL by Custodial Package
3      Supported References Print All

Select Custodial Package Menu Option: 1  ACTIVE by Custodial Package
Select PACKAGE NAME:  CIRN  CLINICAL INFO RESOURCE NETWORK      RG
DEVICE: HOME//      UCX DEVICE      Right Margin: 80//
```

## Internal Relations

All routines, files and options within the CIRN-PD software can function independently.

## Package-wide Variables

There are no package-wide variables associated with CIRN-PD.



# Software Product Security

## *CIRN/MPI Mail Groups*

<b>Mailgroup</b>	<b>Suggested Coordinator</b>	<b>Suggested Members</b>
RG CIRN DEMOGRAPHIC ISSUES	Patient Admin Coordinator/Medical Administration Service (MAS) Automated Data Processing Application Coordinator (ADPAC)	Personnel that deal with patient data.
RG CIRN HL7 PROBLEMS	Person who will monitor CIRN HL7 problems.	Person who will monitor CIRN HL7 problems.
MPIF EXCEPTIONS	Information Resource Management (IRM) person who will be monitoring the technical type problems that can occur during messaging.	IRM person who will be monitoring the technical type problems that can occur during messaging.
MPIF CMOR REQUEST	Person who will monitor CMOR Change Requests.	Personnel that will process CMOR Change Requests.
MPIF HL7 GROUP	IRM Staff	No members should be placed in this mail group. This group is used to transmit HL7 messages to the MPI via MailMan.

## *Bulletins*

Extensive information on Bulletins may be found on in the Implementation and Maintenance section of this manual and in Appendix E.

## *Remote systems*

The CIRN-PD package makes extensive use of HL7 messaging to ensure synchronization of patient records between sites. Please refer to the *CIRN Patient Demographics* manual, and the *Master Patient Index (MPI) VSTA HL7 Interface Specification* manuals for complete details on message construction.

## ***Archiving/Purging***

There are no application-specific archiving or purging procedures or recommendations for the Clinical Information Resource Network (CIRN) package.

The HL7 and MailMan packages have purging options that should be used to control the large number of HL7 messages that CIRN PD and MPI produce.

## ***Contingency Planning***

Sites should have a local contingency plan to be used in the event of application problems in a live environment.

Field station Information Security Officers (ISOs) can get assistance from the Regional ISO (RISO).

CIRN provides the Send/Suspend/Stop CIRN Message Processing option as a standalone option. It is **NOT** to be attached to any menu. This option allows IRM to set the message activity state (Send/Suspend/Stop). The normal state is Send. Suspend provides a means to temporarily hold messages for later transmission while a transmission problem is being solved. Stop is used only to shut down CIRN permanently.

In the event that connection to the MPI cannot be made, CIRN will assign local ICNs. These will be processed against the MPI in a background job once connection is re-established.

## ***Interfacing***

CIRN PD does not interface with any non-VA products at the present time.

## ***Electronic signatures***

CIRN does not use electronic signatures.

## ***Menus***

The CIRN Menu List appears in the External Options section of this manual.



## Security Keys

There are no security keys in the CIRN package.

## Files with Security Access

FILE #	NAME	DD ACCESS	RD ACCESS	WR ACCESS	DEL ACCESS	LAYGO ACCESS
990.8	CIRN REPOSITORY SITE PARAMETER					
991.1	CIRN HL7 EXCEPTION LOG					
991.11	CIRN HL7 EXCEPTION TYPE	@	@	@	@	@
991.8	CIRN SITE PARAMETER					
995	CIRN EVENT ASSOCIATION					
995.1	CIRN EVENT EXCEPTION					
995.2	CIRN EVENT STATISTICS					

## References

VHA CIRCULAR 10-91-050, DATED MAY 15, (SUBJ: NATIONAL HEALTH CARE PLAN)

VHA DIRECTIVE 10-92-031, DATED MARCH 23, 1992 (SUBJ: VA MEDICAL CENTER NETWORKS {RCS10-0855}).

VHA DIRECTIVE 10-94-100, DATED OCTOBER 6, 1994 (SUBJ: GUIDANCE FOR THE IMPLEMENTATION OF PRIMARY CARE IN VHA)

VISION FOR CHANGE: A PLAN TO RESTRUCTURE THE VETERANS HEALTH ADMINISTRATION (1995)

CIRN HL7 INTERFACE SPECIFICATION DOCUMENT

MONOGRAPH: MASTER PATIENT INDEX (AT [HTTP:// WWW . VSTA . MED . VA . GOV/TIEST /MPI/MPIMONOG.HTML](http://www.vsta.med.va.gov/tiest/mpl/mpimonog.html))

WHITE PAPER ON CIRN PATIENT DEMOGRAPHICS COMPONENT - INITIAL SYNCHRONIZATION PROPOSAL. INTERFACILITY OUTPATIENT REFERRALS WITHIN THE VISN ORGANIZATIONAL MODEL STUDY DOCUMENT (1995).

CIRN FOCUS GROUP MEETING (7/97) MINUTES.

DUPLICATE RECORD MERGE: PATIENT MERGE FUNCTIONAL SPECIFICATIONS (1996).

## Official Policies

The CIRN-PD V. 1.0 release is controlled on a site-by-site basis. Sites must have installed CIRN Pre-Installation and Implementation V. 0.5 and completed all of the pre-implementation steps prior to the installation of CIRN-PD V. 1.0.



# How to Generate Online Documentation

On-line documentation about the Clinical Information Resource Network Patient Demographics (CIRN-PD) package may be obtained in a number of ways:

## ***Retrieving Online Help Using Question Marks***

The use of question marks at the file and field level is described in the *VA FileMan Technical Manual*. The use of question marks within the menu system invokes help about options and menus. One question mark at the top-level menu prompt displays the items available on the menu. Two question marks will show the Common Menu available to all users, as well as any secondary menu options for the current user. Locked options are displayed, if the user holds the key. Three question marks display descriptions of the options from the Option file. Four question marks display a help frame, if one has been associated with this option in the Option file. A question mark followed by the name of an option on the current menu displays a help frame, if one has been named for that option in the Option file.

## ***Print Options File***

The Print Option file, in the Kernel's Menu Management Menu, displays a list of namespaced options associated with the CIRN-PD package. Other namespaced entries may also be retrieved from the Print, Input, and Sort Template files, and the Security Key, Function, Bulletin, and Help Frame files.

## ***List File Attributes***

Use this VA FileMan option to generate documentation pertaining to files and file structure. Use the Standard format to obtain the following data dictionary information for a specified file(s):

- File name and description
- Identifiers
- Cross-references
- Files pointed to by the file specified
- Files which point to the file specified
- Input, print, and sort templates

Additionally, the following information is supplied for each field in the file:

- Field name and number
- Global location
- Description
- Help prompt
- Cross-reference(s)
- Input transform

- Date last edited
- Notes

Use the Global Map format of this option to generate a list of:

- All cross-references for the selected file
- Global location of each field in the file
- Input, print, and sort templates

### ***Inquire to Option File***

Use this FileMan option to generate documentation pertaining to files and file structure. Use the Standard format to obtain the following data dictionary information for a specified file(s):

- File name and description
- Identifiers
- Cross-references
- Files pointed to by the file specified
- Files which point to the file specified
- Input, print, and sort templates

## ***XINDEX***

This option analyzes the structure of a routine(s) to determine in part if the routine(s) adheres to **VSTA** Programming Standards. The XINDEX output may include the following components: compiled list of errors and warnings, routine listing, local variables, global variables, naked globals, label references, and external references. By running XINDEX for a specified set of routines, the user can learn of any deviations from **VSTA** Programming Standards which exist in the selected routine(s) and see how routines interact with one another, that is, which routines call or are called by other routines.

To run XINDEX for the CIRN software, specify the following namespaces at the "routine(s) ?>" prompt: RG\*.

RG initialization routines which reside in the UCI in which XINDEX is being run, compiled template routines, and local routines found within the RG namespace should be omitted at the "routine(s) ?>" prompt. To omit routines from selection, preface the namespace with a minus sign (-).

# Glossary

Active Patients	Patients who have been seen at a site within the past three years.
ADT (Admission Discharge and Transfer)	A part of the Patient Information Management System (PIMS).
ADT/HL7 Pivot File	Changes to any of the fields of patient information will be recorded and an entry created in the ADT/HL7 Pivot File. When an update to a patient's treating facility occurs, this event is added to the ADT/HL7 Pivot file and marked for transmission. A background job will collect these updates and broadcast the appropriate HL7 message (A08 Patient Update or MFN Treating Facility Updates) . This is a ADT HL7 message designed for CIRN/MPI.
Batch Messages	There are instances when it is convenient to transfer a batch of HL7 messages. Common examples related to CIRN/MPI are queries sent to the MPI for an ICN during the initialization process, the resolution of Local or Missing ICNs, and CMOR Batch Comparisons. Such a batch could be sent online using a common file transfer protocol.
Bulletins	CIRN generates messages and bulletins to alert the user to problems that occur in generating or processing HL7 messages. CIRN's Exception Handling menu contains options to manage the problems.
Clinical Integration Resources Network (CIRN)	CIRN identifies the sites where a patient is receiving care, creates and maintains a clinical repository of data reflecting all VHA care for that patient, and shares that data between those sites.
CIRN Master of Record (CMOR)	The CMOR site is the designated "owner" of the patient's descriptive and clinical data. A patient has only one CMOR at a time, but the CMOR can change. Initially, the MPI assigns the CIRN Master of Record based upon the first site at which the MPI encounters the patient. The designation of a site as the CMOR for a patient does not provide "workload credit" or any other distinction. This is a new field in the Patient file.
Clinical Object Dictionary (COD)	The Clinical Object Dictionary defines clinical entities and their relationships and properties to provide a uniform and standard means for identifying and retrieving data stored within the Clinical Object Repository (COR),
Clinical Object Repository (COR)	The repository contains core clinical information for patients that bridges multiple clinical data sources and institutions . Stored data elements include a wide variety of clinical observations (lab results, procedures, prescription data, narrative reports, etc.) with numerous attributes such as site of origin, ordering provider, and visit linkages.

One of the functions of CIRN is to create and maintain the clinical repository and to move clinical data between subscribing sites. A patient's CMOR site is

considered to have the "gold" version of a patient's clinical repository.

Clinical Patient Record System (CPRS)	CIRN software is built upon the foundation created by the CPRS work. CPRS provides a computer-based patient record and organizes and presents all relevant data on a patient in a way that directly supports clinical decision-making. CPRS integrates the extensive set of clinical and administrative applications available within <b>VSTA</b> .
Clinical Subscriber	Clinical subscribers receive updates to both the patient's descriptive data and clinical repository information. Clinical subscribers do not have to be treating facilities. However, for treating facilities, a subscription with an infinite expiration date is implied. They may not deactivate from descriptive subscriptions. A treating facility, upon registration of a patient known elsewhere, automatically becomes a subscriber.
CMOR Activity Score	<p>The CMOR Activity Score reflects a patient's activity at a site over the past 3 years. It is used during initialization with the MPI to identify active patients. It is later used in determining the logical CMOR for a patient. The CMOR activity score is stored in the Patient file along with the date last calculated. It can be recalculated as needed.</p> <p>Following the initialization with the MPI, a site runs an option that identifies the shared patients for which it is <b>not</b> the CMOR. An option is provided to send messages to the CMOR sites in order to compare the CMOR scores and reassign the CMOR if that action appears to be appropriate. Changing the CMOR requires agreement between the two sites involved.</p>
Date of Death	A patient may be entered as deceased at a treating facility. If a shared patient is flagged as deceased, an RG CIRN DEMOGRAPHIC ISSUES bulletin is sent to each subscribing site telling where, when, and by whom the deceased date was entered. Each site can then review whether the patient should be marked as deceased at their site.
Demographic Data	Identifying descriptive data about a patient, such as: name, sex, date of birth, marital status, religious preference, SSN, address, etc.
Descriptive Subscriber	Descriptive subscribers receive changes to patient demographic information including CMOR changes and updates to the subscription and treating facilities lists. Descriptive subscribers can request a change in status if they wish to also receive clinical repository data.
Direct Connect	<p>The Direct Connect is a real-time TCP/IP connection to the Master Patient Index to allow for an immediate request for an ICN. It is activated when using and the following PIMS options:</p>

Register A Patient,  
Load/Edit Patient Data, and

## 10-10T Registration processes in PIMS

and when using the following MPI options:

MPI Single Patient Initialization

Display Only Query option .

Eligibility Codes	Codes representing the basis of a patient's eligibility for care.
Health Level 7 (HL7)	A national level standard for data exchange in all healthcare environments regardless of individual computer application systems.
Health Level 7 (HL7) <b>VSTA</b>	A messaging system developed as a <b>VSTA</b> software package that follows the HL7 Standard for data exchange.
HINQ (Hospital Inquiry)	The Hospital Inquiry (HINQ) module provides the capability to request and obtain veteran eligibility data via the VA national telecommunications network. Individual or group requests are sent from a local computer to a remote Veterans Benefits Administration (VBA) computer where veteran information is stored. The VBA network that supports HINQ is composed of four computer systems located in regional VA payment centers.
HL7 MFN Messages	An HL7 Update Treating Facility message type (Master File Notification [MFN]). When an update to a patient's treating facility occurs, this event is added to the ADT/HL7 Pivot file and marked for transmission. A background job will collect these updates and broadcast the HL7 MFN messages. This is an ADT HL7 message designed for CIRN and MPI.
MPI Initialization	The process of initializing a site's Patient file with the Master Patient Index (MPI). Initialization synchronizes Patient file information (for active patients) with the MPI and identifies facilities where the patient has been treated. This process transfers the Integration Control Number (ICN), CIRN Master of Record (CMOR), and Treating Facility list for each patient to the patient's record in the <b>VSTA</b> Patient file at all sites where the patient has been treated. It is also possible to initialize an individual patient to the MPI. This is done through menu options. The initial synchronization of patient file information (for active, shared patients) with the Master Patient Index and with the patient's treating facilities is an important step in the implementation of the CIRN software system.
Integration Control Number (ICN)	The Integration Control Number (ICN) is a unique identifier assigned to patients when they are added to the Master Patient Index. ICNs link patients to their records across VA systems. The ICN follows the American Society for Testing Materials (ASTM) E1714-95 standard for a universal health identifier.

Master Patient Index (MPI-Austin)	The MPI is the master index of all VHA patients. The MPI assigns and maintains unique national patient identifiers, Integration Control Numbers or ICNs, which link patients to their records across VHA systems. The MPI also assigns the initial CMOR (first site to identify the patient to the MPI). It contains patient's identifying descriptive information (e.g., name, SSN, date of birth, mother's maiden name, place of birth state, and place of birth city).
Master Patient Index (MPI - <b>VSTA</b> )	<p>This software resides in <b>VSTA</b> and supports the Austin side of the MPI, as well as the CMOR (CIRN Master Of Record) change requests. MPI (<b>VSTA</b>) enables sites to query the MPI (Austin) for the:</p> <ol style="list-style-type: none"> <li>1. assignment of ICN (i.e., Integration Control Number) and CMOR</li> <li>2. inactivation of an ICN for a patient, and</li> <li>3. known patient data on the MPI (Austin)</li> </ol> <p>Any updates to patient data are then sent to the MPI (Austin) and to sites where a patient has been seen. MPI (<b>VSTA</b>) also manages incoming and outgoing Change CMOR requests.</p>
Message Segments	Each HL7 message is composed of segments. Segments contain logical groupings of data. Segments may be optional or repeatable. A [ ] indicates the segment is optional, the { } indicates the segment is repeatable. For each message category, there will be a list of HL7 standard segments and/or "Z" segments used for the message.
Non-CMOR Sites	Sites that are not the CMOR for a given patient but which nevertheless have an interest in the patient.
Patient Demographics	Identifying descriptive information about a patient. With CIRN and MPI, key demographic information for a patient is the same at each of the treating facilities where that patient is seen. Also, a module of the CIRN package.
Patient Merge (also see Kernel Toolkit, Duplicate Record Merge: Patient Merge)	<p>Patient Merge is a <b>V VSTA</b> application that provides an automated method to eliminate duplicate patient records within the <b>VSTA</b> database [i.e., the <b>VSTA</b> Patient file (#2)]. It consists of three steps:</p> <ol style="list-style-type: none"> <li>1. search for potential duplicate record pairs,</li> <li>2. review, verification, and approval of those pairs, and</li> <li>3. the merge process</li> </ol>
PD (Patient Demographics)	Identifying descriptive information about a patient. With CIRN and MPI, key demographic information for a patient is the same at each of the treating facilities where that patient is seen. Also, a module of the CIRN package.



Pseudo-SSNs	False Social Security Numbers that are calculated internally to <b>VSTA</b> and can not be mistaken for valid SSNs because they end with a "P". Updating active patients' missing or pseudo-SSNs is necessary in order to interface properly with the MPI.
REGENSTRIEF Medical Record System	Model for CIRN, from the Regenstrief Institute of Indianapolis, Indiana; also referred to as the Indianapolis model.
Registration Process	During a registration, if a patient does not have an ICN, the patient is checked against the entries in the MPI to determine if the patient already is established or needs to be added . The MPI may return a list of patients who are possible matches. If the patient is truly new and there are no potential matches in the MPI, the MPI will assign an ICN and assigns the requesting site as the CMOR. If the patient is already known at the MPI, the ICN and CMOR is returned and an HL7 message is sent to the CMOR to add this new facility to the list of Treating Facilities for this patient. At the CMOR site, A04 Registration HL7 messages are sent to the MPI and all sites where the patient is known. These messages update the date of last activity and any changes to the descriptive data. At a non-CMOR site, an A04 Registration HL7 message is sent to the CIRN Master of Record.
Score Calculation Date	Date when the CMOR Activity Score was last calculated. This is a new field in the Patient file (#2).
Segment Table Definitions	For each segment, the data elements are described in table format. The table includes the sequence number (SEQ), maximum length (LEN), data type (DT), required or optional (R/O), repeatable (RP/#), the table number (TBL #), the element name, and the <b>VSTA</b> description.
Sensitive Patient	A patient whose record contains certain information, such as political figures, employees, patients with a particular eligibility or medical condition may be deemed sensitive by a facility. If a shared patient is flagged as sensitive at one of the treating sites, a bulletin is sent to the RG CIRN DEMOGRAPHIC ISSUES mail group at each subscribing site telling where, when, and by whom the flag was set. Each site can then review whether the circumstances meet the local criteria for sensitivity flagging.
Shared Patient	A patient that is registered for care at more than one facility. The CMOR keeps the Treating Facility List and Subscription List updated every time a new facility where the patient has been seen identifies itself to the MPI. The CMOR then broadcasts the updated lists to all the other facilities that share this patient.
Subscriber	A subscriber is an entity that receives updates to a patient's descriptive and/or clinical data from other sites. Clinical subscribers receive updates to both the patient's descriptive data and clinical repository information. Clinical subscribers do not have to be treating facilities. However, for treating facilities, a subscription with an infinite expiration date is implied. They may not deactivate from descriptive subscriptions. A treating facility, upon registration

of a patient known elsewhere, automatically becomes a subscriber. Descriptive subscribers receive changes to patient demographic information including CMOR changes and updates to the subscription and treating facilities lists. Descriptive subscribers can request a change in status if they wish to also receive clinical repository data.

Subscription	The process used to identify the sites that will receive clinical and/or descriptive information for a patient.
Synchronized Patient Data	Key descriptive fields in the patient file that are updated in all the descriptive subscriber's patient files whenever the fields are edited by a subscriber.
Treating Facility	Any facility where a patient has applied for care, or has been added to the local Patient file (regardless of VISN) is placed on the Treating Facility List. This list is part of the synchronized patient descriptive data. Treating Facilities receive both descriptive and clinical updates for that patient but may elect to receive descriptive updates only. They may not deactivate their subscription to descriptive (i.e., patient demographic) data. Changes to patient descriptive data that are identified at a treating facility trigger a message to the CIRN Master of Record. After review and acceptance, the CMOR broadcasts an update message to all treating facilities, subscribers, and the MPI. Clinical updates to the patient's record are made directly from the treating facility and broadcast to all other treating facilities and clinical subscribers for the patient.
Treating Facility List	A table of institutions at which the patient has received care. This list is used to create subscriptions for the delivery of patient clinical and demographic information between sites.
Trigger Events	An activity in <b>VSTA</b> that creates HL7 messages.
Z Segments	An HL7 custom segment format. Z segments are used when the standard HL7 v2.3 does not meet the needs to share data. Each Z segment must be approved by the HL7 Administrator within Technical Services.

# Appendix A - CIRN Business Rules

## **Start-up (only)**

A patient's CMOR will be the first treating site that identifies the patient to the MPI.

## **Duplicate ICNs**

More than one patient in a single Patient file (#2) can not have the same ICN. For example, let's say that the MPI returned an ICN to your local Patient file for a patient who previously did not have one assigned. If that same ICN is currently assigned to a different patient in your local Patient file, an exception message is sent to the MPI EXCEPTIONS mail group, and the ICN, CMOR, and treating facilities list is not updated for this new patient.

## **CMOR changes**

Receiving site must be a treating facility (patient must be registered there).

## **Update Messages**

Descriptive data update messages are broadcast by the CMOR. Clinical data updates are broadcast directly to the subscribers by the treating facility.

## **Institution File**

A site can be in only one VISN at a time. A record in the Institution file can not have two parents of the same type.

A record in the Institution file cannot be a child and have children of its own.

## **MPI (Austin )**

The MPI assigns national ICN and initial CMOR (first site to identify the patient to the MPI). The MPI accepts update messages only from the CMOR. The MPI maintains a copy of the treating facilities list but not the subscription list. Subscriber messages are not sent to the MPI.

## **Treating Facilities**

Broadcast messages to add a treating facility for a patient will come only from the CIRN Master of Record (CMOR). The site requesting to be added sends a message to the CMOR, the CMOR broadcasts an A08 update message.

## **Subscriptions**

All Subscribers to clinical data will be subscribers to descriptive data. A clinical subscriber can change to a descriptive category. Subscribers that are not designated as treating facilities may deactivate their subscription using an expiration date. Treating Facilities will be clinical subscribers unless they request descriptive only. Treating facilities may not deactivate from descriptive subscriptions.

Sites can only subscribe/unsubscribe themselves except in cases of automatic subscription (treating facility).

Descriptive subscription lists will be synchronized.

**Patient Sensitivity**

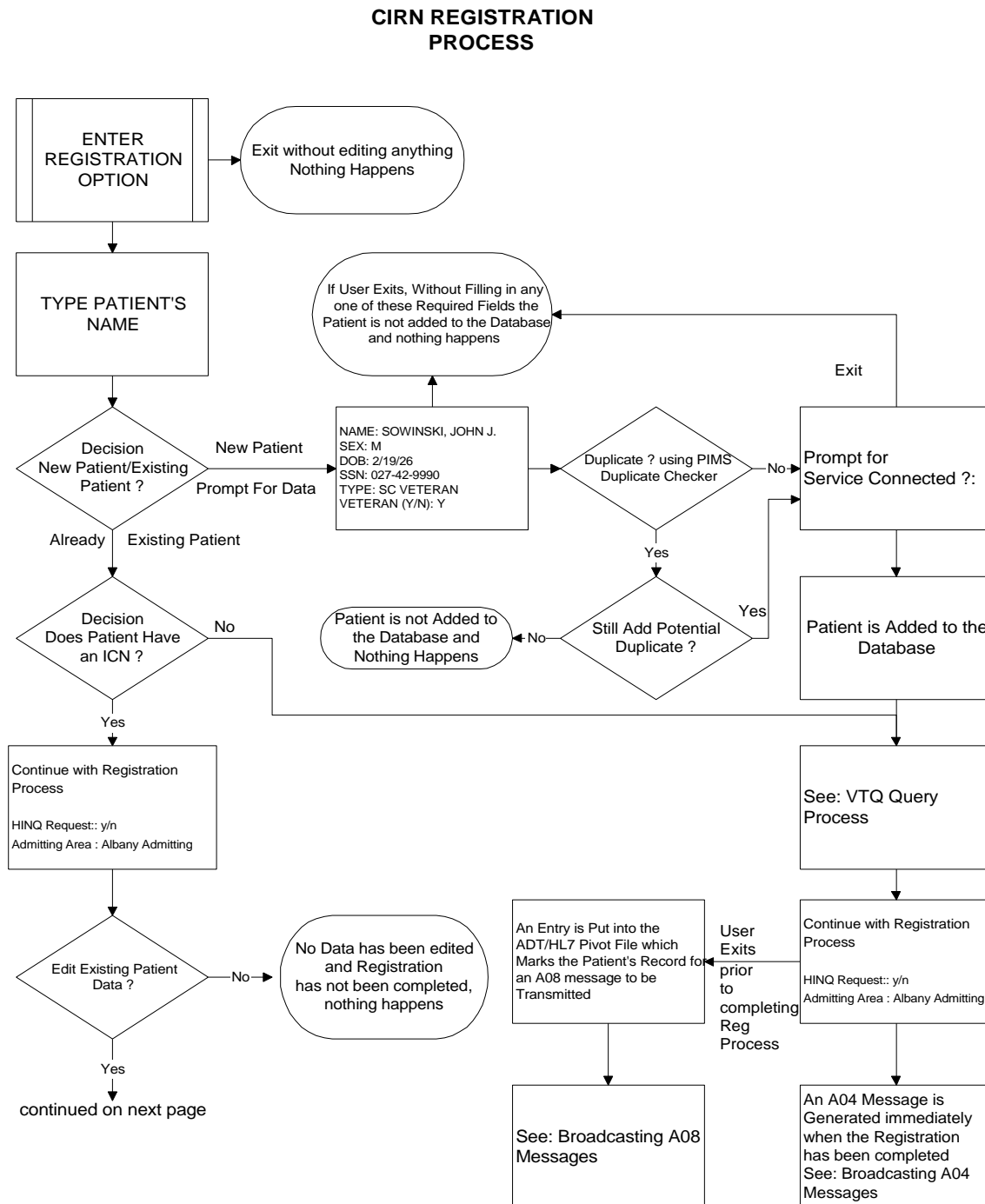
If a shared patient is flagged as sensitive at one of the treating sites, a bulletin is sent to the RG CIRN DEMOGRAPHIC ISSUES mail group at each subscribing site telling where, when, and by whom the flag was set. Each site can then review whether the circumstances meet the local criteria for sensitivity flagging. If the site chooses to change the patient to a sensitive status, the option to do so would be used and then a bulletin would be sent to the mail group established in the PIMS package for notifying users of a sensitive patient change.

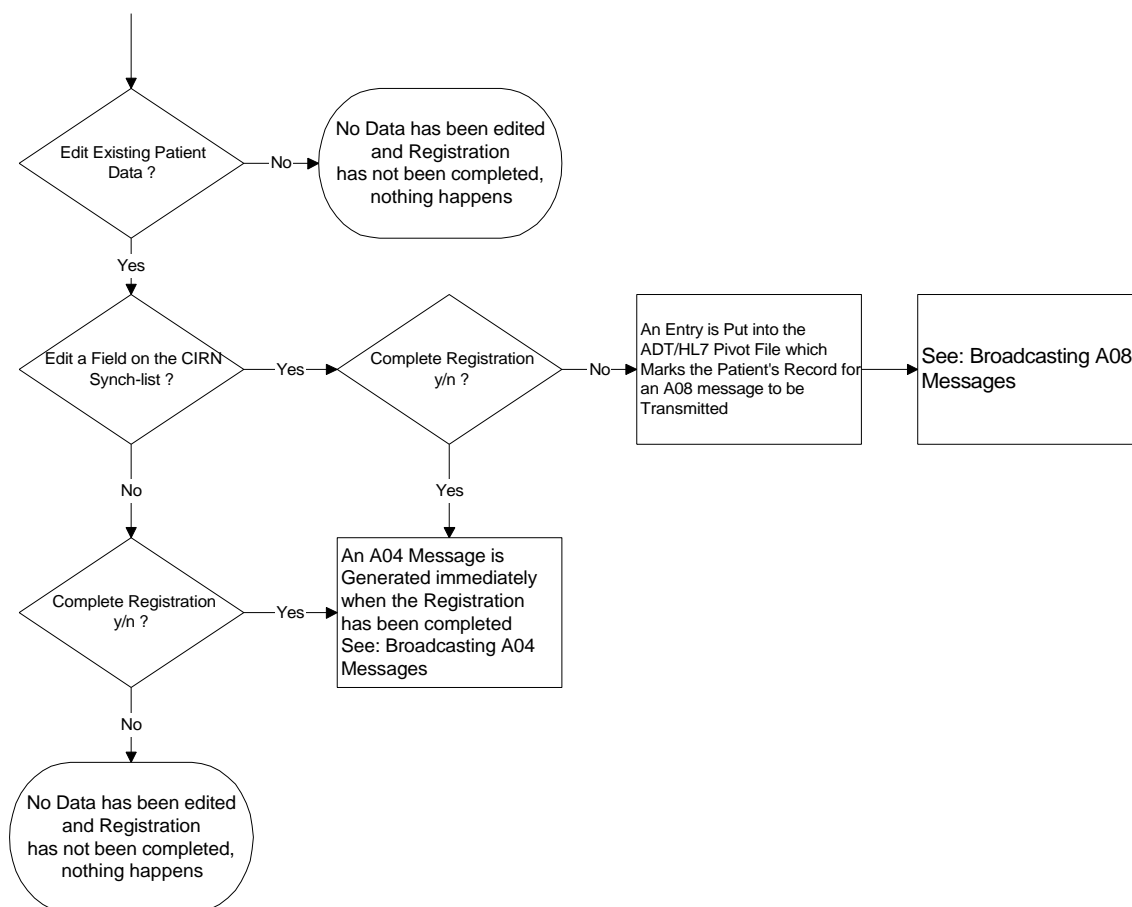
**Date of Death**

A patient may be entered as deceased at a treating facility. If a shared patient is flagged as deceased, a bulletin, RG CIRN DEMOGRAPHIC ISSUES, is sent to each subscribing site telling where, when, and by whom the deceased date was entered. Each site can then review whether the patient should be marked as deceased at their site.

## Appendix B - CIRN Process Diagrams

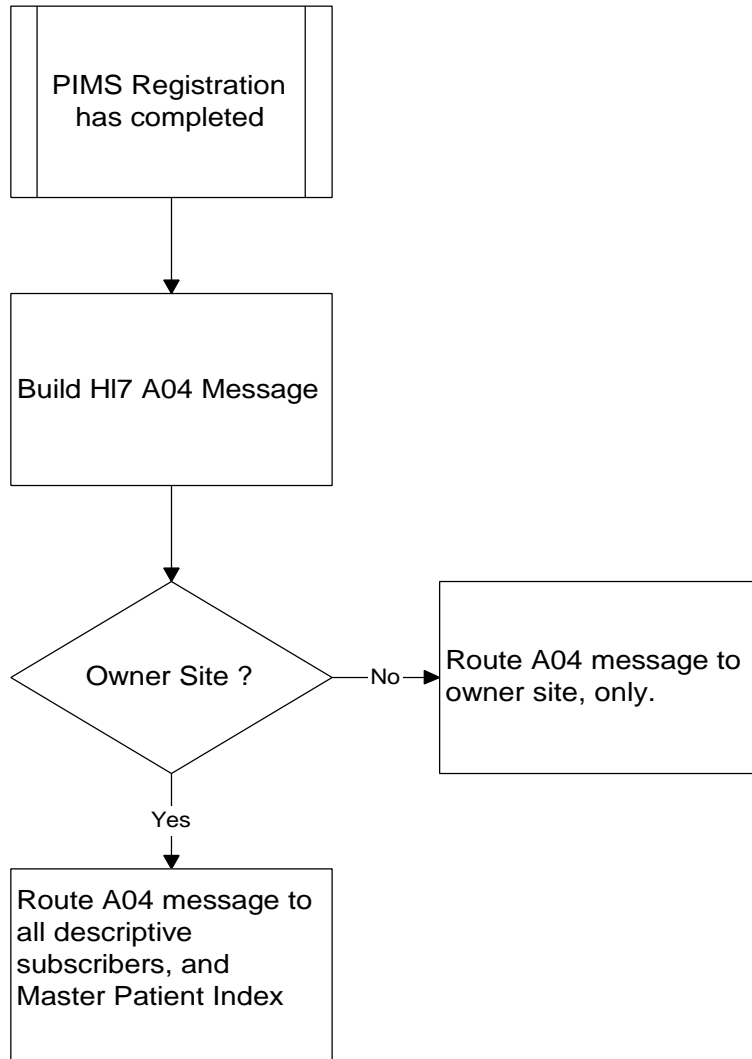
*Data flow diagram of the Registration Process (includes CIRN enhancement):*





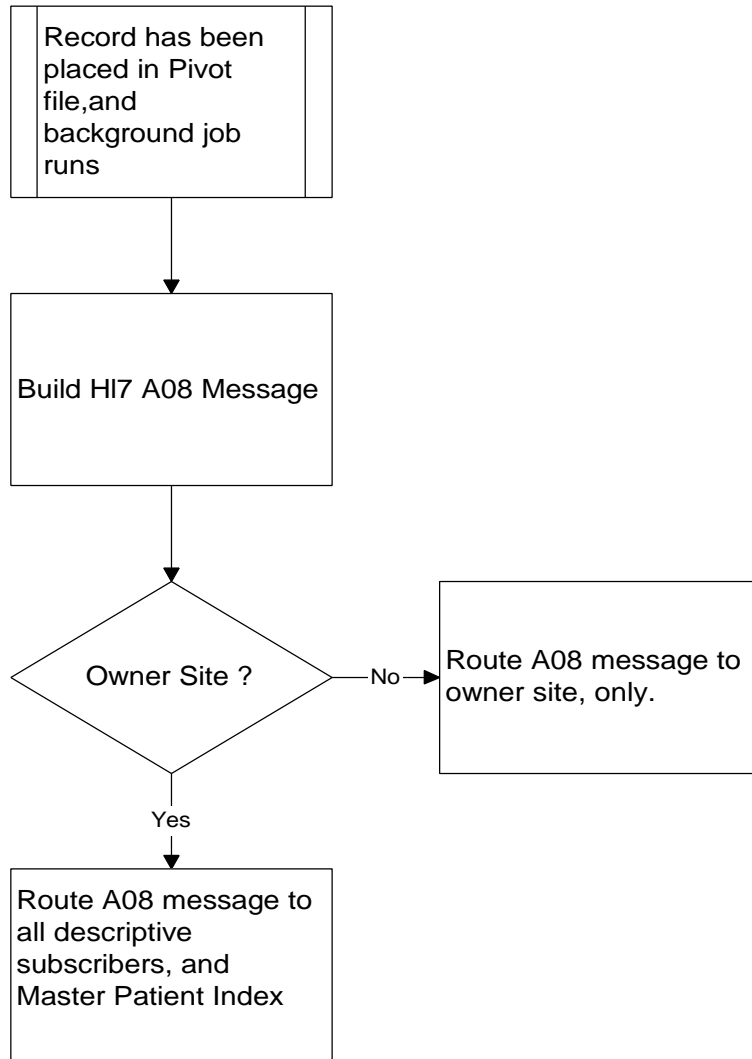
*Data flow diagram of the A04 Broadcast Process:*

**A04 PROCESS**

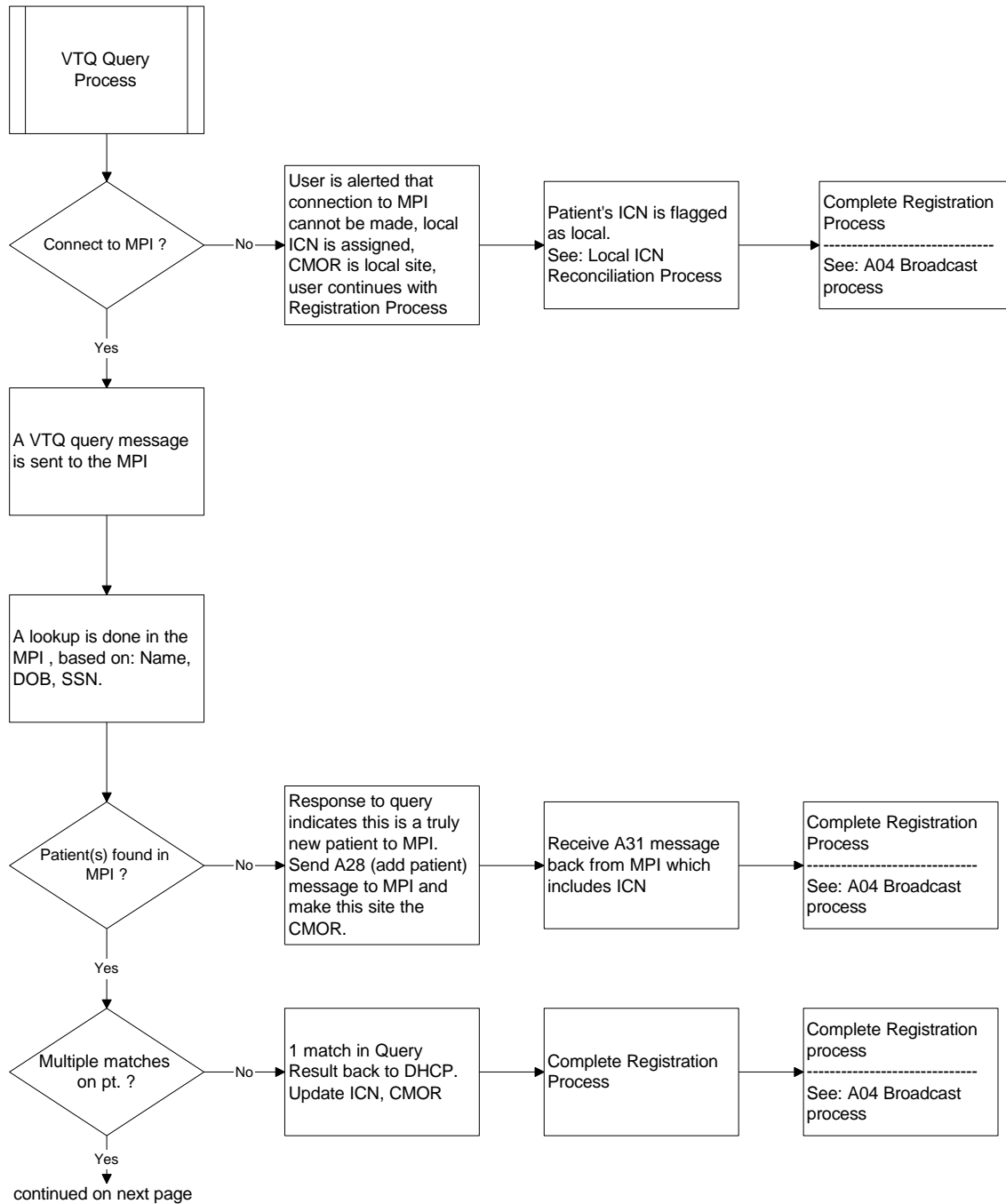


***Data flow diagram of the A08 Broadcast Process:***

**A08 PROCESS**





***Data flow diagram of the CIRN VTQ Query process:*****Cirn VTQ Query Process**



## Appendix C - TCP/IP Set-up

Further information on TCP/IP set-up can be found on the **VISTA** intranet site  
<http://152.127.1.95/softserv/infrastr.uct/ov/index.html> .

## UCX Setup for DSM/VMS sites

The UCX service may be used at any DSM site (recommended) or a Single Threaded Mumps Listener (see instructions below)

User Account  
=====

Username:	HLSEVEN	Owner:	HEALTH LEVEL SEVEN
Account:		UIC:	[50,45] ([HLSEVEN])
CLI:	DCL	Tables:	DCLTABLES
Default:	DSAx:[HLSEVEN]		
LGICMD:	NL:		
Flags:	DisCtlY Restricted Captive		
Primary days:	Mon Tue Wed Thu Fri		
Secondary days:		Sat Sun	
Primary	000000000011111111112222	Secondary	000000000011111111112222
Day Hours	012345678901234567890123	Day Hours	012345678901234567890123
Network:	##### Full access #####		##### Full access #####
Batch:	----- No access -----		----- No access -----
Local:	----- No access -----		----- No access -----
Dialup:	----- No access -----		----- No access -----
Remote:	----- No access -----		----- No access -----
Expiration:	(none)	Pwdminimum:	6 Login Fails: 1
Pwdlifetime:	(none)	Pwdchange:	(pre-expired)
Last Login:	(none) (interactive), 25-NOV-1996 15:28 (non-interactive)		
Maxjobs:	0 Fillm:	500	Bytlm: 100,000
Maxacctjobs:	0 Shrfillm:	0	Pbytlm: 0
Maxdetach:	0 BIOlm:	18	JTquota: 1024
Prclm:	2 DIOlm:	18	WSdef: 300
Prio:	4 ASTlm:	24	WSquo: 500
Queprio:	0 TQElm:	10	WSextent: 2048
CPU:	(none) Enqlm:	3000	Pgflquo: 100000
Authorized Privileges:			
NETMBX	OPER	SHARE	TMPMBX
Default Privileges:			
NETMBX	OPER	SHARE	TMPMBX

Directory and .COM File  
=====

Create directory DSAX:[hlseven] to serve as the home directory for HLSEVEN.  
This directory will house the com file that is executed whenever a client connects as well as a log file.

Directory DSAX:[HLSEVEN]

## Appendix C - TCP/IP Set-up

```
HLSEVEN.COM;7          25-NOV-1996 12:01:02.50
HLSEVEN.JOU;2          25-NOV-1996 10:06:35.68
HLSEVEN.LOG;30         25-NOV-1996 15:28:02.30
```

\$!HLSEVEN.COM - MESSAGE SERVICE on the Alpha

```
$!-----
$ purge/keep=2 sys$login:*. *
$ user="HLSEVEN"           !Where to send the messages
$ set noon                 !Don't stop
$ set proc/priv=(share)    !Required to use the MBX device
$ x=f%trnlm("sys$net")    !This is our MBX device
$!
$ write sys$output x       !This can be viewed in the log file
$ set nover                !Don't pass this stuff to the output device
$!-----
$!  **Be sure this command line is correct for your system
$!  **and if access control is enabled, that this account has
$!  **access to this uci,vol and routine.  The number 999 should be
$!  **replaced with the internal entry number if file 870 for this
$!  **Logical Link
$!
```

**\$ dsm/envIRON=MGRISC/uci=ISC/vol=ISC/data="'x'^2" EN^HLCSTCP**

\$!-----  
<<editor's note: the 2 / noted here is the ien or name of the logical link for your site from the HL Logical Link file (#870)>>

\$ logout/brief

UCX Service

=====

Use port 5000.

ISC6A1: ucx sho service hlseven/full

Service:	HLSEVEN	State:	Enabled		
Port:	5000	Protocol:	TCP	Address:	0.0.0.0
Inactivity:	5	User_name:	HLSEVEN	Process:	HLSEVEN
Limit:	10	Active:	0	Peak:	1

File: DSAX:[HLSEVEN]HLSEVEN.COM  
Flags: Listen

Socket Opts: Rcheck Scheck  
Receive: 0 Send: 0

Log Opts: None  
File: not defined

Security

Reject msg: not defined  
Accept host: 0.0.0.0  
Accept netw: 0.0.0.0

### Logical Link and LLP Parameters

=====

Define your Logical Link and Lower Level Protocol parameters for your new receiver. Be sure to set field CLIENT/SERVER to MULTI LISTENER.  
HL Logical Link (file #870):

```

NODE: ISC-SF      <this will be the logical link for your site>
LLP PARAMETERS: SF-TCP-RECV <this will correspond to your site also>
  LLP ONLINE: NO                                STATE:
  TIME STOPPED:                                SHUTDOWN LLP ?:
  QUEUE SIZE: 10
  IN QUEUE BACK POINTER: 0                      IN QUEUE FRONT POINTER: 0
  OUT QUEUE BACK POINTER: 0                     OUT QUEUE FRONT POINTER: 0

```

### HL Lower Level Protocol Parameters:

```

NAME: SF-TCP-RECV <corresponds to your site and the LLP Parameter in 870>
  LLP TYPE: TCP
  TCP/IP ADDRESS: 152.132.1.56 <this will correspond to your site's IP
address. This field should not be updated with out contacting NVS due to the
other sites having this address to allow for communication between
facilities.>
  TCP/IP PORT: 5000 <recommend by HL7 Team>
  CLIENT/SERVER: MULTI LISTENER <only for your link>

```

## Single-Threaded Listeners

Single-threaded listener mode for TCP/IP messaging is available for all currently supported M operating systems:

- Caché on NT
- DSM for OpenVMS

To set up single-threaded listeners, simply define an entry in the HL logical Link file for each single-threaded listener. No additional setup is required.

## Logical Link Setup for Single Listener

Using the Interface Workbench, create a Logical Link entry for the single threaded listener. The following field settings are appropriate for single-threaded listeners:

LLP Type: TCP

TCP/IP address: DSM for OpenVMS: null; Caché for NT: IP address of listener system

TCP/IP Port: Port to listen on.

TCP/IP Service Type: SINGLE LISTENER

Persistent: Null

Startup Node: (set only for OpenVMS systems running dual TaskMan.)

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Currently Defined

Logical Links

```

=====
(22) A6A LISTENER
LLP Parameter: A6A5000 TCP/IP Address: <NONE>
LLP Type: TCP (T) TCP/IP Port: 5000

```

Queue Size: <DEFAULT> TCP/IP Service Type: **SINGLE LISTENER**  
Institution: <NONE> Persistent: <DEFAULT>  
Domain: <NONE> Startup Node: <NONE>  
Autostart: <DEFAULT>

## How to Start and Stop the Listener

To start single-threaded listeners, use the Start LLP option. Choose the Logical Link entry you defined for the listener. Typically you would run the link in the background. To stop the listener, use the Stop LLP option.

### *Multi-Threaded Listener Setup: Caché on NT*

Kernel patch XU\*8\*78 provides a multi-threaded listener for TCP/IP messaging for Caché on NT systems.

#### Logical Link Setup

Using the Interface Workbench, create a Logical Link entry for the multi-threaded listener. The following field settings are appropriate for multi-threaded listeners for Caché on NT:

LLP Type: TCP

TCP/IP address: IP address of listener system

TCP/IP Port: (the port to listen on)

TCP/IP Service Type: **MULTI LISTENER**

Persistent: null

Startup Node: (set only for OpenVMS systems running dual TaskMan.)

HL-7 Interface Workbench Sep 03, 1998 13:16:55 Page: 15 of 27

Currently Defined

Logical Links

=====

(23) A6A UCX LISTENER

LLP Parameter: A6A5000 TCP/IP Address: <NONE>

LLP Type: TCP (T) TCP/IP Port: **5000**

Queue Size: <DEFAULT> TCP/IP Service Type: **MULTI LISTENER**

Institution: <NONE> Persistent: <DEFAULT>

Domain: <NONE> Startup Node: <NONE>

Autostart: <DEFAULT>

## How to Start and Stop the Listener

To start the multi-threaded listener for Caché on NT systems, use the Start LLP option. Choose the Logical Link entry you defined for this listener. Typically you would run the link in the background. To stop the listener, use the Stop LLP option.

# Appendix D - CIRN Event Queue

## *Introduction*

The event queue feature consists of the CIRN Event Queue global, ^RGEQ(, and the CIRN Event Queue back ground job (daemon). Triggering events can come from a variety of sources. These include demographic and clinical subscription control updates and all clinical data updates for active CIRN data sources within the **VISTA** clinical application software suite. These updates may either generate an HL7 message to a remote source (i.e. subscription or CIRN Master Of Record (CMOR) request to remote facilities) or they may generate updates to the Clinical Repository which, in turn, may be transmitted to other treating facilities.

The CIRN Event Queue must be started and running for several types of messaging updates to occur. These include Subscription Control, CIRN Master Of Record Request, patient Clinical Repository update messages, and others.

Activities that use the CIRN Event Queue for transmission will place a stub record into the CIRN Event Queue global. This is a temporary storage area for these records. As the events in the Event Queue are processed, these records are removed from the Event Queue global. When triggering events place a "stub" record in the CIRN Event Queue global control is returned immediately to the **VISTA** software application or option to minimize the impact on the triggering software application or its users.

## *CIRN Event Queue Structure*

The format of the CIRN Event Queue global entries is as follows:

^RGEQ(type,stub\_record\_iem[,returned\_error\_code,event\_protocol]) = ""

The "type" is the text name of the event type from CIRN Event Association file (#995). Some examples of these are:

<u>Event Type</u>	<u>Event Name</u>
CH	Laboratory Chemistry Result
CH_BL	Historical Back Load of Chemistry Result Data
CMOR REQUEST	CMOR Request
RX	Outpatient Prescription Entry or Edit
RX_BL	Historical Back Load of Outpatient Pharmacy Data
SCN_REQ	Subscription Request

The CIRN Event Association file also contains the name of the routine that will be invoked to process each type of event.

The "stub\_record\_ien" is the internal record entry number for the record in the file that caused the event. Examples of these are the internal entry number of a prescription from the Prescription file (#52), or an entry in the PTF file (#45) for a patient who was discharged.

The "returned\_error\_code" and "event\_protocol" are optional parameters.

The "returned\_error\_code" is the error that will be returned if HL7 is unable to generate a message for transmission.

The "event\_protocol" is the internal number of the entry in the Protocol file (#101). Some messages are generated by Protocols and other messages are generated by routines.

## ***Managing the CIRN Event Queue***

### **Starting the CIRN Event Queue**

The CIRN Event Queue options will be installed during the installation of CIRN-Patient Demographics (CIRN-PD ) and Master Patient Index (MPI).

Upon installation the CIRN Event Queue is inactive. To activate it several steps must be taken.

1. First, the CIRN Event Queue must be started. This is accomplished by using the Start CIRN Event Queue [RGEQ START] option on the CIRN Event Queue Manager menu [RGEQ MGR]. If this is not done, the CIRN Event Queue global will not accept the creation of stub entries to be processed.

This will set the top-level entry in the CIRN Event Queue global (^RGEQ("ASTOP")) to NO. This is correct. The "ASTOP" subscript may be viewed as "Asked to Stop". If this entry is set to YES, the CIRN Event Queue will not accept the creation of stub messages for processing.

In addition to setting the CIRN Event Queue global to accept entries, executing this option will also cause the CIRN Event Queue daemon (background routine) to be tasked to run immediately. The Event Queue daemon will check the Event Queue global for entries that need to be processed. If entries exist, and all required parameters are set to allow processing, the daemon will generate a new tasked background (subdaemon) job for each event type in the Event Queue global. Once each routine finishes with its event type it will quit. The Event Queue Daemon will quit if there are no entries to be processed in the Event Queue. TaskManager will restart it at its regularly scheduled time.

2. Second, the Send PIMS HL7 V2.3 Messages field (#391.7013) in the MAS Parameters file (#43) must be set to SEND. This field can be set to STOP (0), SEND (1), or SUSPEND (2). If this field is set to anything other than SEND, entries may still be created in the CIRN Event Queue global but they will not be processed by the Event Queue Daemon.
3. The CIRN Event Queue Autostart option [RGEQ AUTOSTART] should be tasked to run with a frequency of every 600 seconds. This will restart the Event Queue Daemon to check for Event Queue entries that require processing. This restarted job will stop if the Event Queue Daemon is already running.



## Other system functions that may effect the CIRN Event Queue

There are several other system tasks that may effect being able to start or stop the CIRN Event Queue.

1. TaskManager must be running. If TaskManager is not running or has a backlog of tasks, the Event Queue Daemon will continue to task jobs for new events but the jobs may not start in a timely manner.
2. The HL7 filers must be running. These may be monitored using the appropriate options on the HL7 Main Menu [HL MAIN MENU] V1.6 Options [HL MENU 1.6] submenu. If the filers are not running, entries will not be placed into the Event Queue global and updates to external demographic and clinical subscribers will not be processed. In addition, the HL7 Logical Links for external subscribing sites (including the Master Patient Index) must be on line for messages to them to be processed.

## Stopping the CIRN Event Queue

There may be circumstance when the Event Queue must be stopped. There are several steps required to do this.

1. The CIRN Event Queue Autostart [RGEQ AUTOSTART] option must be unscheduled using the appropriate TaskManager option. If it is not unscheduled, TaskManager will restart the CIRN Event Queue daemon at its scheduled time, reset the CIRN Event Queue global to accept new entries for processing, and begin processing the existing entries in the Event Queue global once again. This should be done before proceeding to step 2.
2. The CIRN Event Queue must be stopped if you wish to prevent new entries from being added to the CIRN Event Queue global for processing. Existing entries in this global will not be removed and will remain until the CIRN Event Queue daemon restarts and processes the entries. Simply stopping the CIRN Event Queue by using the Halt CIRN Event Queue option [RGEQ STOP] on the CIRN Event Queue Manager [RGEQ MGR] will not stop the processing of Event Queue entries. If the Event Queue daemon is currently running or CIRN Event Queue Autostart option is still scheduled to run the entries in the Event Queue global will continue to be processed. **\*Note\* If the creation of entries into the CIRN Event Queue global is prevented in this manner, Clinical Repository transaction updates for active clinical data sources will not be accumulated for processing and will not be transmitted to either the local Repository or to subscriber sites. This can only be remedied by running the Backload Clinical Data option [RGHL BACKLOAD] for all active data sources for the period when the Event Queue was stopped.**
3. The Send PIMS HL7 V2.3 MESSAGES field (#391.7013) in the MAS Parameters file (#43) should be set to STOP (0) or SUSPEND (2). This will also prevent entries in the Event Queue global from being processed.

The Event Queue should only be stopped in extreme situations and should be restarted, as described above at the earliest moment possible.

There also may be instances where it may be necessary to stop the processing of existing entries in the CIRN Event Queue but the accumulation of entries in the Event Queue global is also desirable. To do this:

1. The CIRN Event Queue Autostart [RGEQ AUTOSTART] option must be unscheduled using the appropriate TaskManager option. If it is not unscheduled, TaskManager will restart the CIRN Event Queue daemon at its scheduled time, reset the CIRN Event Queue global to accept new entries for processing, and begin processing the existing entries in the Event Queue global once again. This should be done before proceeding to step 2.
2. Stop the Event Queue daemon and subdaemon jobs using the appropriate supplied system utility (i.e. FORCEX, etc.). The Event Queue daemon job (^RGEQDMN) must be stopped first. Then stop the Event Queue subdaemon jobs (^RGEQSUB) in the same manner. Doing this out of sequence will cause the Event Queue daemon to start new subdaemons for the jobs just stopped. **\* Note \* The data for the clinical transaction entries being processed when the subdaemon jobs are stopped will not be filed in the Clinical Repository or transmitted to subscriber sites. It can be reprocessed and retrieved by performing the Backload Clinical Data [RGHL BACKLOAD] option for all active clinical data sources for each patient being processed by the each of the subdaemons.**

# Appendix E - Exception Messages and Bulletins

## *CIRN Demographic Issues Bulletins*

CIRN sends several bulletins to the CIRN DEMOGRAPHIC ISSUES mail group. These are designed to alert MAS personnel of problems related to CIRN information processing. They are:

### **Patient-related bulletins:**

- Missing Data
- Patient Not Found
- Inconsistent Data
- Remote Sensitivity Indicated
- Address Change

### **Master File Update bulletins:**

- Patient Not Found (Treating Facility type)
- Inconsistent Data (Treating Facility type)

The two types of HL7 messages (Patient-related messages and Master File updates) have distinct processing steps.

## *Patient Related Messages*

These messages concern any changes in demographic information (such as Marital Status, address, etc.) for a particular patient. All incoming patient-related messages go through the same validation steps.

### **Check for missing data**

The first step is the check on the incoming HL7 message to make sure that certain required fields are present. These fields are: Name, SSN (unless pseudo or not available), Date of Birth (DOB), and Integration Control number (ICN). If one of these fields is missing or null, a Missing Data bulletin is generated.

**Note:** This bulletin should be very rare since Name, SSN, and DOB are required fields which must be entered in order to add the patient to the database at the sending site. The Integration Control Number is provided by the MPI when the patient is initially processed.

```
Subj: CIRN - MISSING DATA [#93351] 22 Apr 98 11:16 43 Lines
From: CIRN PACKAGE in 'IN' basket. Page 1
```

```
-----
The CIRN Package has received a message from:
ALLEN PARK, MI --> Site Number: 553
This message was missing required data
```

```
FIELD: .01 = BURNETT,COREL
FIELD: .02 = FEMALE
FIELD: .03 = 2500501
FIELD: .05 = UNKNOWN
FIELD: .08 = UNKNOWN/NO PREFERENCE
```

## Appendix E – Exception Messages and Bulletins

```
FIELD: .09 = 887438885
FIELD: .097 = 2980422
FIELD: .111 = TESTING NOT2
FIELD: .1112 = 99999
FIELD: .112 = "@"
FIELD: .113 = "@"
FIELD: .114 = ROUND LAKE
FIELD: .115 = NEW YORK
FIELD: .117 = CATTARAUGUS
FIELD: .131 = "@"
FIELD: .132 = "@"
FIELD: .211 = "@"
FIELD: .219 = "@"
FIELD: .2403 = "@"
FIELD: .301 = NO
FIELD: .302 = "@"
FIELD: .31115 = "@"
FIELD: .323 = "@"
FIELD: .351 = "@"
FIELD: .361 = EMPLOYEE
FIELD: .3612 = "@"
FIELD: .3615 = "@"
FIELD: 391 = EMPLOYEE
FIELD: 991.01 = "@"
FIELD: 991.02 =
FIELD: 991.03 = ALBANY, NY
FIELD: 1901 = NO
FIELD: DFN = 7171322
FIELD: FLD = .112;.113;.111;
FIELD: SENDING SITE = 553
FIELD: SENSITIVITY = "@"
FIELD: SENSITIVITY DATE = "@"
FIELD: SENSITIVITY USER = "@"
FIELD: SITENUM = 500
```

### Locate the Patient in the Database

The next thing the software does is attempt to find the patient in your database by using the ICN. If the software cannot find the patient, it generates a Patient Not Found bulletin.

```
Subj: CIRN - PATIENT NOT FOUND [#93362] 23 Apr 98 14:08 46 Lines
From: CIRN PACKAGE in 'IN' basket. Page 1 **NEW**
```

```
-----
The CIRN Package has received a message from:
ALBANY, NY --> Site Number: 500
This patient has your station as a subscriber, however
the patient was not found in your database.
```

```
-----
Remote Data
```

```
FIELD: .01 = BURNETT,CARAL
FIELD: .02 = FEMALE
FIELD: .03 = 2340512
FIELD: .05 = DIVORCED
FIELD: .08 = ISLAM
FIELD: .09 = 887438885
FIELD: .097 = 2980423
FIELD: .111 = NANCY STREET SENS
FIELD: .1112 = "@"
FIELD: .112 = "@"
FIELD: .113 = "@"
FIELD: .114 = "@"
FIELD: .115 = "@"
FIELD: .117 =
FIELD: .131 = "@"
FIELD: .132 = "@"
FIELD: .211 = "@"
FIELD: .219 = "@"
```

```

FIELD: .2403 = "@"
FIELD: .301 = NO
FIELD: .302 = "@"
FIELD: .31115 = "@"
FIELD: .323 = "@"
FIELD: .351 = "@"
FIELD: .361 = EMPLOYEE
FIELD: .3612 = "@"
FIELD: .3615 = "@"
FIELD: 391 = EMPLOYEE
FIELD: 991.01 = 1000304603
FIELD: 991.02 = 842887
FIELD: 991.03 = ALBANY, NY
FIELD: 1901 = NO
FIELD: DFN = 7169753
FIELD: FLD = .111;
FIELD: SENDING SITE = 500
FIELD: SENSITIVITY = "@"
FIELD: SENSITIVITY DATE = "@"
FIELD: SENSITIVITY USER = "@"
FIELD: SITENUM = 500

```

### Do a match on SSN, and CIRN Master Record Site (CMOR)

The third step is the check on the incoming HL7 message to insure that certain data in the incoming message matches the information for the patient in the receiving system. This insures that this, in fact, is the same patient. Data fields that are checked are the Integration Control number (ICN) and the CMOR. If these fields do not match, an Inconsistent Data bulletin is generated. Also, the system compares the SSN; if they do not match, the system will still process the HL7 message and update the patient. It will also add the patient to the exception list and fire this bulletin.

```

Subj: CIRN - INCONSISTENT DATA [#93364] 23 Apr 98 14:23 51 Lines
From: CIRN PACKAGE in 'IN' basket. Page 1

```

```

-----
The CIRN Package has received a message from:
ALBANY, NY --> Site Number: 500
This message contains data that is inconsistent
with your site's data.

```

```

Local Name: BURNETT,COREL
Local SSN: 887438885
Local ICN: 1000304603
Local CMOR: BATAVIA, NY

```

#### Remote Data

```

-----
FIELD: .01 = BURNETT,CARAL
FIELD: .02 = FEMALE
FIELD: .03 = 2340512
FIELD: .05 = DIVORCED
FIELD: .08 = ISLAM
FIELD: .09 = 887438885
FIELD: .097 = 2980423
FIELD: .111 = NANCY STREET SENS
FIELD: .1112 = "@"
FIELD: .112 = "@"
FIELD: .113 = "@"
FIELD: .114 = "@"
FIELD: .115 = "@"
FIELD: .117 =
FIELD: .131 = "@"
FIELD: .132 = "@"
FIELD: .211 = "@"
FIELD: .219 = "@"
FIELD: .2403 = "@"
FIELD: .301 = NO

```

```
FIELD: .302 = "@"
FIELD: .31115 = "@"
FIELD: .323 = "@"
FIELD: .351 = "@"
FIELD: .361 = EMPLOYEE
FIELD: .3612 = "@"
FIELD: .3615 = "@"
FIELD: 391 = EMPLOYEE
FIELD: 991.01 = 1000304603
FIELD: 991.02 = 842887
FIELD: 991.03 = ALBANY, NY
FIELD: 1901 = NO
FIELD: DFN = 7169753
FIELD: FLD = .111;
FIELD: SENDING SITE = 500
FIELD: SENSITIVITY = "@"
FIELD: SENSITIVITY DATE = "@"
FIELD: SENSITIVITY USER = "@"
FIELD: SITENUM = 500
```

### Remote Sensitivity Indicated

Now that we know for sure that we are in fact dealing with the correct patient, the system checks the incoming HL7 message to see if the patient is marked as a "Sensitive" patient at the sending site, but not at the receiving site. If this is true, a Remote Sensitivity Indicated bulletin is generated. This is a cue to mark the patient's record as "Sensitive" at the receiving site.

```
Subj: Remote Sensitivity Indicated [#93001] 11 Mar 98 13:18 8 Lines
From: CIRN PACKAGE in 'IN' basket. Page 1 **NEW**
-----

The CIRN Package has received a message from:
ALBANY, NY --> Site Number: 500

This message indicates that Pt. BURNETT,CARAL is flagged as Sensitive at
the other facility but is not flagged as Sensitive at your facility.

Remote User Who Flagged the Pt as Sensitive: CARLSON-GOTTS,NANCY
Date/time remote user Flagged Pt Sensitive: Feb 04, 1998@13:38
```

## Address Change

Finally, the system checks the incoming message to see if any of the address-related information is different than the current information in the receiving site's database. The specific fields checked are: Street Address [LINE 1], Street Address [LINE 2], Street Address [LINE 3], City, State, ZIP+4, and County. The message tells you that Address fields were deleted from your data based on more recent information from the CMOR site.

```

Subj: BURNETT **CIRN ADDRESS CHANGE**  [#93349] 22 Apr 98 10:44  14 Lines
From: CIRN PACKAGE  in 'IN' basket.   Page 1  **NEW**
-----

The CIRN Package has received a message from:
ALLEN PARK, MI --> Site Number: 553
This message changed the Address of Patient:
BURNETT,COREL

      <<OLD ADDRESS>>                                <<NEW ADDRESS>>

STREET ADDRESS [LINE 1]: 2979 MAPLE COURT                SAME
STREET ADDRESS [LINE 2]: APARTMENT 2B                    DELETED
STREET ADDRESS [LINE 3]:                                SAME
CITY: ROUND LAKE                                         ROUND LAKE
COUNTY: CATTARAUGUS                                    CATTARAUGUS
STATE: NEW YORK                                          NEW YORK
ZIP+4: 99999                                             99999

```

## Master File Update Messages

These messages concern any changes in Treating Facility for a particular patient. Only two validation checks are performed for these messages, as there is a lesser amount of data in the HL7 Treating Facility update message.

### Locate the Patient in the Database

The first thing the software does is to parse out the ICN and attempt to find the patient whose treating facility list requires the update. If the system doesn't find the patient in the database, it generates a Patient Not Found bulletin. The format of this Patient Not Found bulletin is slightly different from the Patient-related Patient Not Found bulletin because the incoming data is different, but the principle is the same.

```

Subj: CIRN - PATIENT NOT FOUND  [#92985] 10 Mar 98 16:01  10 Lines
From: CIRN PACKAGE  in 'IN' basket.   Page 1
-----

The CIRN Package has received a message from:
ALLEN PARK, MI --> Site Number: 553

This patient has your station as a subscriber, however
the patient was not found in your database.

-----
Remote Data

FIELD: CMOR = 553
FIELD: MFE = MFE^MAD^^19970922^553~ALLEN PARK, MI~VA~500002791~ICN~VA
FIELD: MFI = MFI^TFL^^UPD^^NE
FIELD: SENDING SITE = 553

```

## Do a Match on CMOR (CMOR Lookup Failed)

The second check the system does for Treating Facility updates is to compare the patient's CMOR in the update message to that in the receiving system. This is just an additional check in order to insure that the correct patient was selected. Not much identifying information is sent in the TF messages; consequently, data fields such as Name or SSN cannot be checked - only CMOR. If the CMORs fail to match, the software generates an Inconsistent Data bulletin, again similar in functionality to the one for Patient-related messages, but different in format because the data in the incoming HL7 message is different.

```

Subj: CIRN - INCONSISTENT DATA [#93100] 27 Mar 98 13:18 15 Lines
From: CIRN PACKAGE in 'IN' basket. Page 1 **NEW**
-----

The CIRN Package has received a message from:
ALBANY, NY --> Site Number: 500
This message contains data that is inconsistent
with your site's data.

Local Name: BURNETT,CARAL
Local SSN: 887438885
Local ICN: 1000304603
Local CMOR: BATAVIA
-----

Remote Data

MSH^~|&^VAFC PIMS^500^VAFC PIMS^500^19980327124412^^MFN~M05^236^P^
USA
MFI^TFL^^REP^^NE^500~ALBANY, NY
MFE^MAD^^19980311^500~ALBANY, NY~VA~1000304603~ICN~VA

```

## CIRN Exception Messages

### Patient DFN Failed

The Patient DFN Failed message indicates that the inbound message could not identify the patient using the ICN number passed.

```

Subj: CIRN Exception: Patient DFN Failed [#14331286] 10 Apr 99 11:33 1 Line
From: HL7 Msg#5462795 1 of 1 Response read. in 'IN' basket. Page 1
-----

Patient DFN Failed: Msg#5462795 Bad DFN, -1^ICN NOT IN DATABASE, for DOE,JOHN
(ICN#1000654314)

See Appendix F of the Clinical Information Resource Network
Patient Demographics (CIRN-PD) and Master Patient Index (MPI) Installation and
Implementation Guide.

Select MESSAGE Action: IGNORE (in IN basket)//

```



## SSN Matched Failed

SSN Matched Failed identifies that the inbound subscription message ICN and SSN for that patient does not match what is on your system.

```

Subj: CIRN Exception: SSN Match Failed [#14312177] 09 Apr 99 20:17 1 Line
From: HL7 Msg#263 in 'IN' basket. Page 1 **NEW**
-----
SSN Match Failed: SSN on File = 427050521P SSN in Message = MESSAGE #
33780
68 around line number 992

See Appendix F of the Clinical Information Resource Network
Patient Demographics (CIRN-PD) and Master Patient Index (MPI) Installation
and Implementation Guide.

Select MESSAGE Action: IGNORE (in IN basket)//

```

## Missing/Unable to get Logical Link

This message is used if a logical link could not be found for an outbound message. You will need to verify HL\*1.6\*39 successfully installed.

## CIRN HL7 Exception Messages Related to MPI (VISTA)

During the processing of HL7 messages for the MPI and CMOR options, it's possible for CIRN HL7 Exception (problem) e-mail messages to be generated. These messages serve to notify IRM and/or MAS personnel of dilemmas or situations that have been encountered. Listed below are the mail groups to which these exception messages are sent, depending on the nature of the problem. They are listed by mail group name, type of problem, and recommended mail group members.

1. Members of the RG CIRN DEMOGRAPHIC ISSUES mail group are automatically notified of problems relating to data, such as:
  - Patient's dates of death not being synchronized between your local Patient file (#2) and the MPI.
  - Patient entries with missing required field(s) (i.e., Date of Birth or Name) when trying to add them to the MPI.
  - Potential matches were found during the initialization or during the Local/Missing ICN resolution job that need to be resolved manually in order to obtain an ICN.

It is recommended that MAS personnel (i.e., ADPACs and/or Coordinators, etc.) be made members of this mail group.

2. Members of the MPIF EXCEPTIONS mail group are automatically notified of technical type problems (e.g., such as data update failures or problems with HL7 messages causing them not to be processed). It is recommended that IRM personnel be made members of this mail group.

## Sample Exception Messages

This section provides sample CIRN Exception messages and/or gives descriptions of the types of messages that are sent from the MPI to the mail groups RG CIRN DEMOGRAPHIC ISSUES and MPIF EXCEPTIONS. The information is categorized by audience: by IRM and MAS Personnel, respectively. They are provided to give you an idea of what you can expect to receive if you are a member of either of these mail groups.

### Sample Exception Messages — MAS Personnel

This section is comprised of sample CIRN Exception messages that require action by MAS Personnel who are members of the mail group: RG CIRN DEMOGRAPHIC ISSUES.

#### CIRN Exception Message: Required field(s) Date of Birth or Name missing for Patient sent to MPI

This message is sent to MAS personnel during the initialization of the MPI with your local Patient file if the required fields Name and Date of Birth have not been populated. These required fields must have values before patients can be assigned ICNs. After they are populated, you must use the MPI (**VSTA**) option Single Patient Initialization to obtain the ICN assignment.

```
Subj: CIRN Exception: Required field(s) Date of Birth or Name missing for
patient sent to MPI [#11488656] 24 Oct 98 12:48 1 Line
From: HL7 Msg#126520 in 'IN' basket. Page 1 **NEW**
-----
For Patient DFN=123450 Need required fields before patient can be processed
again the MPI.
Select MESSAGE Action: DELETE (from IN basket)//
```

### Examples of Common Exception Messages Requiring MAS Interaction

The sample CIRN Exception messages on the following pages are more common and may be encountered during the implementation phase and throughout the daily operations of the MPI and CIRN PD.

**CIRN Exception Message: Multiple ICNs**

This message is intended for interaction by MAS personnel who are responsible for resolving potential duplicates in the Patient file. This sample message shows that the MPI identified both of these patients as being the same person. However, CIRN/MPI Business Rules prevents two or more patients in the same Patient file from having the same ICN.

(For more information on CIRN/MPI Business Rules, see Appendix A in this manual.)

```

Subj: CIRN Exception: Multiple ICNs  [#707] 18 Mar 99 08:19  1 Line
From: HL7 Msg # 10345 in 'IN' basket.    Page 1
-----

Multiple ICNs: Patient dfn 12864 returned ICN 1000923833 that is already in
use for Patient dfn 18789 use Duplicate Record Merge to Checkout pair

Select MESSAGE Action: DELETE (from IN basket)//

```

**CIRN Exception Message: Potential Matches Returned**

This exception message is used to inform MAS personnel that a patient could not be assigned an ICN because potentially matching entries were found in the MPI that closely match the patients identifying information. The MPI (**VSTA**) option Single Patient Initialization must be used to manually resolve this problem.

```

Subj: CIRN Exception: Potential Matches Returned  [#42113] 25 Mar 99 13:03  1
Line
From: HL7 Msg#102598  in 'IN' basket.    Page 1  **NEW**
-----

Potential Matches Returned: For Patient DFN=20897.  Use Single Patient
Initialization to MPI option to manually process.

Select MESSAGE Action: IGNORE (in IN basket)//

```

The next three sample CIRN Exception messages are used to inform MAS personnel that this patient is thought to be deceased, and that information doesn't match between the Patient file at your facility and the MPI.

### **CIRN Exception Message: Death Entry on MPI not in VSTA**

This exception message is used to inform MAS Personnel that the Date of Death field is populated in the MPI for a particular patient. However, that same field is **not** populated in your local Patient file.

```
Subj: CIRN Exception: Death Entry on MPI not in VISTA  [#42126] 25 Mar 99
13:04 1 Line
From: HL7 Msg#102605 in 'IN' basket. Page 1 **NEW**
-----
Death Entry on MPI not in VISTA: Around line 512 MPI DOD= JUL 23, 1998 DFN=
472 MESSAGE# 1662467

Select MESSAGE Action: IGNORE (in IN basket)//
```

### **CIRN Exception Message: Death Entry on VSTA not in MPI**

This exception message is used to inform MAS Personnel that the Date of Death field is populated in your local Patient file for this patient. However, that same field is **not** populated in the MPI.

```
Subj: CIRN Exception: Death Entry on Vista not in MPI  [#42212] 25 Mar 99
13:14 1 Line
From: HL7 Msg#102652 in 'IN' basket. Page 1 **NEW**
-----
Death Entry on Vista not in MPI: Around line 302 VISTA DOD= FEB 28, 1998 DFN=
34215 MESSAGE# 1662863

Select MESSAGE Action: IGNORE (in IN basket)//
```

### **CIRN Exception Message: Death Entries on MPI and VSTA DO NOT Match**

This exception message is used to inform MAS Personnel that both the MPI and your local Patient file have different dates of death for the same patient.

```
Subj: CIRN Exception: Death Entries on MPI and Vista DO NOT Match [#42212] 25
Mar 99 13:14 1 Line
From: HL7 Msg#102652 in 'IN' basket. Page 1 **NEW**
-----
Death Entries on MPI and Vista DO NOT Match: Around line 302 VISTA DOD= FEB
28, 1998 MPI DOD = MAR 30, 1996 DFN= 34215 MESSAGE# 1662863

Select MESSAGE Action: IGNORE (in IN basket)//
```

**CIRN Exception Message: SSN Match Failed**

This exception message is used to inform MAS personnel that there might be a discrepancy in a patient's SSN between your local Patient file and the MPI. In this example, the facilities local Patient file has a pseudo SSN for a patient. However, the MPI does **not** have one at all (i.e., the field is not populated in the MPI).

Another example of an event that would cause this message to fire is where an SSN might be populated in both your local Patient file and the MPI for the same patient. However, the values are different (e.g., the site has a pseudo SSN and the MPI has a "national" SSN for the same patient). Based on a review by MAS personnel, it can be decided if the SSN should be updated in your local Patient file.

```

Subj: CIRN Exception: SSN Match Failed  [#43914] 25 Mar 99 15:04  1 Line
From: HL7 Msg#109087  in 'IN' basket.    Page 1  **NEW**
-----
SSN Match Failed: SSN on File = 407041148P SSN in Message = MESSAGE # 1675216
around line number 302

Select MESSAGE Action: IGNORE (in IN basket)//

```

**CIRN Exception Message: Name Doesn't Match**

This exception message is used to inform MAS personnel that the Name returned from MPI does not match entry in your local Patient file. This message should be forwarded to the MAS Coordinator at your facility to see if this patient's name should be updated in the local Patient file.

```

Subj: CIRN Exception: Name Doesn't Match  [#11485765] 24 Oct 98 10:59  1 Line
From: HL7 Msg#10265245  in 'IN' basket.    Page 1
-----
Name Doesn't Match: Name on File = LALONDE,ROBERT WILLIAM SR  Name in Message
= LALONE,BOB W  MESSAGE# 5261579 around line number 972

Select MESSAGE Action: DELETE (from IN basket)//

```



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